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The Erasmus Wilson Lectures

ON

PERITONITIS, A BACTERIOLOGICAL STUDY.

Delivered before the Royal College of Surgeons of England on Feb. 20th, 22nd, and 24th, 1905,

BY LEONARD S. DUDGEON, M.R.C.P. LOND., M.R.C.S. ENG.,

SUPERINTENDENT OF THE CLINICAL LABORATORY AND DEMONSTRATOR OF CLINICAL PATHOLOGY AT ST. THOMAS'S HOSPITAL; GILLSON SCHOLAR IN PATHOLOGY OF THE SOCIETY OF APOTHECARIES; ERASMUS WILSON LECTURER, ROYAL COLLEGE OF SURGEONS OF ENGLAND;

AND

PERCY W. G. SARGENT, M.A., M.B., B.C. CANTAB., F.R.C.S. ENG.,

RESIDENT ASSISTANT SURGEON AT ST. THOMAS'S HOSPITAL; ERASMUS WILSON LECTURER, ROYAL COLLEGE OF SURGEONS OF ENGLAND.

LECTURE III.[1]

Delivered on Feb. 24th.

THE FUNCTIONS OF THE PERITONEUM.

MR. PRESIDENT AND GENTLEMEN,—It is customary to regard the peritoneum as a vast lymphatic space of great absorptive power. Whatever may be the extent to which this power is exercised in the normal state it is certain that, under abnormal conditions, the peritoneum is capable of absorbing large quantities of fluid. That which is left in the peritoneal cavity after copious flushing and closure of the abdomen is transferred to the circulation with such rapidity as to be credited with a therapeutic action of the same nature as an intravenous infusion, a theory which receives support from the observation that if such a case proves fatal there is at the necropsy practically no fluid remaining, even when the patient has survived the operation only a few hours. Wegner found that a dog's peritoneum is capable of absorbing in one hour an amount of fluid equal to from 3 to 8 per cent. of the animal's body weight. Dubar and Remy found the thoracic duct of a rabbit greatly distended in as short a time as five minutes after a large intraperitoneal injection of albuminous fluid. The greater the percentage of albumin, however, the less rapidly was the absorption effected.

This power of absorption is one of the factors to which the comparative safety of abdominal operations is largely due, for various fluids, even in large quantity, which at times soil the peritoneum during an operation can be safely disposed of. The peritoneum, in fact, to expand a trite expression, performs its own toilet. This function, however, can only be exercised within certain limits and it is to the factors lying beyond these limits that we must look for an explanation of many of the phenomena of peritonitis. It is important in the first place to understand in what manner and by what channels this absorption is effected. The normal peritoneum is, save for the exception of the Fallopian tube in the female, a closed sac, closed microscopically as well as macroscopically. It is no longer held that the cavity communicates directly with the lymphatic system. Muscatello has shown the picturesque stomata of the older writers to have no greater significance than errors of histological technique. His researches showed that not only are there no stomata between the endothelial cells but that there are not even any subendothelial lymphatic spaces over by far the greater part of the serous membrane of the abdominal cavity. The lymph spaces which underlie the endothelial covering of the diaphragmatic peritoneum are absent from that which is disposed over the viscera and abdominal wall. His experiments with carmine upon the peritoneal cavities of dogs showed that the diaphragmatic is the only part of the peritoneum where solid particles are absorbed into the lymphatics and that there is normally a lymph flow towards the diaphragm independent of, but influenced in point of time by, gravity.

The structure of the diaphragmatic peritoneum is completely different from that of the rest of the serous membrane. It presents innumerable pits or wells, perpendicular or oblique to the surface, diving amongst the tendon bundles. They represent microscopic diverticula of the peritoneum and, like it, are lined in their whole extent by endothelial cells. Muscatello observed coloured particles taken up first into these intertendinous pits and then into the lymphatics. This transfer is carried out entirely by means of phagocytes and is accomplished with extraordinary rapidity, for Dubar and Remy found particles of carmine in the thoracic duct only seven minutes after intraperitoneal injection. The irritation of the peritoneum with foreign substances is the signal for the entrance of numbers of phagocytic cells in a clear fluid exudate, the number being proportionate, partly to the time which has elapsed, but chiefly to the nature of the substance which has called them upon the scene. Sections of the diaphragm in cases of peritonitis show the lymphatic spaces crowded with leucocytes laden with bacteria.

Whatever absorption cannot take place by the lymphatic channel must do so by means of the blood stream directly and it is this which constitutes one of the greatest perils of peritonitis. It is questionable whether the healthy peritoneum allows the absorption of anything but fluids to take place by this means, but damage to the protective endothelial covering will render it possible. Provided that this endothelium is uninjured, bacteria and other foreign substances will, within limits, be safely disposed of by the lymphatic route, but damage will at once permit absorption to take place by the vascular route. Indeed, a parallel exists between the peritoneum and the skin. The uninjured hand may be soaked with virulent material with impunity, but an abrasion may determine a rapid and even fatal absorption. The extreme delicacy of the peritoneal membrane, in its thickest part not more than 120μ in depth, renders it particularly susceptible to injury and we have evidence to show that some at any rate of the fatal cases of peritonitis are due to a true septicæmia. In cases of peritoneal infection, however, the patient's safety does not depend solely upon the integrity of the endothelium. The most rapidly fatal organism in peritonitis in the human subject is the streptococcus pyogenes. In cases dead of this infection there is observed an entire absence of agglutination of the intestinal coils, a phenomenon which is early observed in the case of an infection to which the peritoneum reacts, and this fact goes hand-in-hand with the differing behaviour of the leucocytes in the two cases. This agglutination is due to a fibrinous deposit upon the peritoneum and we may say that, as a rule, the longer the infection has lasted the greater is the amount of fibrin deposited upon the peritoneum.

Sections of intestine from a case of gastric perforation, operated upon 16 hours after the onset, which proved fatal from shock almost immediately after the operation but with very little naked-eye evidence of peritonitis, show the endothelial layer intact and covered with a microscopic deposit of fibrin, in the meshes of which are entangled innumerable leucocytes. There is also seen a round-celled infiltration of the subendothelial tissues, which, however, becomes less as the lumen is approached, whilst the mucous membrane is unaffected. At this stage, then, the endothelial layer is, as it were, sandwiched between the fibrinous deposit and the underlying area of round-celled infiltration. Turning now to the diaphragm in a case of peritonitis from appendicitis of five days' duration which proved fatal almost immediately after a limited operation we see this deposit very much more marked, the subendothelial infiltration more intense and the endothelial layer itself indistinguishable. A more advanced instance still is that of a case of chronic suppurative peritonitis, which proved fatal seven weeks after the opening of an appendix abscess. Here there are enormous thickening of the peritoneum, degeneration of the underlying muscle, and disappearance of the endothelial layer. The deeper layers of the deposit are organised into fibrous tissue and as the cœlomic surface is approached this tissue is less and less perfectly organised until at the surface itself we come to the amorphous fibrinous deposit which is seen in the other cases.

We conclude that this fibrinous deposit serves a protective function, both limiting the absorption of toxic material into the subperitoneal blood-vessels and at the same time preventing the further egress of organisms from the intestine into the peritoneum. The absence of this deposit from the most acute cases of all allows a fatal issue

[1] Lectures I. and II. were published in THE LANCET of Feb. 25th (p. 473) and March 4th (p. 548), 1905, respectively.

to occur from hæmic absorption. Another way in which this fibrinous deposit serves as a protective measure is by the agglutination of intestinal coils whereby a localisation of infection may be brought about.

If the peritoneal infection subsides before the endothelium is irrevocably destroyed then the fibrin will be absorbed and the peritoneum resumes its normal appearances, although in consequence of the subendothelial infiltration it will remain permanently thickened. This explains the almost miraculous disappearance of adhesions which is the wonder of the surgeon when he comes to reopen the abdomen some months after the occurrence of an intraperitoneal abscess. The permanent thickening explains, in part at any rate, the resistance to infection which is conferred upon the peritoneum after a previous inflammation. If, however, the endothelium has been destroyed and the fibrinous deposit has had time to organise, then persistent adhesions must result. It will be seen that the pulling off of fibrinous plaques at an operation is to be deprecated as it lays bare the subperitoneal vessels for absorption and that any rough handling which damages the endothelium is likely to be rewarded by the formation of persistent adhesions. It will also be seen that the thorough cleansing of the peritoneum by washing is not only, as is shown in another place, undesirable but a physical impossibility.

What happens when micro-organisms are introduced into the peritoneal cavity depends upon the virulence of those organisms and their power of so damaging the endothelial covering as to gain access to the subendothelial tissues, upon the power of the individual to produce a leucocytosis, and upon the ability of the phagocytes so produced to deal with the organisms. We believe the virulence of the organisms and the rapidity with which they are introduced to be of greater importance than the actual dosage. It is notorious that in many pelvic operations large quantities of purulent fluid may escape into the peritoneal cavity with impunity; the explanation lies in the extremely low degree of virulence of the organisms commonly met with in gynæcological work. Again, peritoneum soiled as it must be with intestinal contents during anastomotic operations under healthy conditions rarely becomes the seat of a spreading inflammation of any consequence, but similar operations undertaken during intestinal obstruction, when the virulence of the intestinal organisms is exalted, are attended with a much greater risk.

We have thought it advisable to eliminate the term "general" as applied to peritonitis, since it is used loosely in two very different senses. By some the term is used to signify that the inflammatory process involves the whole peritoneal surface and by others that it is unlimited by obvious adhesions and is in the process of spreading after the fashion of a cutaneous erysipelas. For the former meaning we have adopted the name *universal* and for the latter *diffuse*—a term which implies no expression of opinion as to the extent of the infection but merely that it is unlimited by definite adhesions. By adhesions we mean every stage from the mere agglutination of neighbouring peritoneal areas to definitely organised tissue.

From the appearances seen at operation it is impossible to form an opinion of any value as to the extent of the peritonitis present. It is customary to gauge it by the degree of redness and distension and by the naked eye appearance of the exudate but we are convinced that none of these criteria are trustworthy. J. W. Crile has shown that the stimulus supplied by opening the abdomen and manipulating the intestines is sufficient to produce a rapid dilatation of the vessels of the splanchnic area. If one watches a given coil of intestine during an abdominal operation one is struck with the rapidity with which the appearance alters. A coil which, on opening the abdomen, appears flabby and slate-coloured or quite pale, on exposure and manipulation takes on first a general flush and soon afterwards one can see the subperitoneal vessels mapped out in a pattern. At the same time the lumen appears to fill with gas and to become distended. If the operation is prolonged or the manipulation is at all violent the changes are such that an observer seeing it for the first time would pronounce some degree of peritonitis to be present. These changes occur much more rapidly in conditions of obstruction or peritonitis, so that at the end of the operation the peritonitis appears to be more severe in degree and extent than at the beginning. To estimate the peritonitis present, then, even by the usual criteria, the observation must be made immediately the abdomen is opened. Now if, as Crile holds, shock is due to reflex vaso-dilatation of the splanchnic area then such a condition as the crushing of a limb will be accompanied unseen by an increased vascularity of the intestines. Shock from the sudden strangulation of a hernia or the perforation of a gastric ulcer will be accompanied by similar changes so that on opening the abdomen a more extensive degree of peritonitis will appear to be present than is actually the case when tested by bacteriological means.

Many experimenters have shown that the natural resistance of the peritoneum to infection can be artificially increased. Issaeff in 1894 was the first to show that various sterile solutions previously injected into the peritoneal cavity of guinea-pigs could render that membrane more or less refractory to infection with certain pathogenic organisms. In the following year Melsome and Cobbett, working with cultures of streptococci, showed that an immunity could be produced by successive minute inoculations. H. E. Durham obtained similar results in rabbits from preliminary injection of sterile fluids. More recently, Salieri, and Miyake working under Professor von Mikulicz, have confirmed these observations and succeeded in producing an artificial immunity in animals by preliminary intraperitoneal injections of sterile saline solution, nucleic acid, and other substances. The protection thus afforded is, as Durham pointed out, due in large measure at any rate to the appearance in the peritoneal exudate of certain phagocytic cells. The question arises whether this artificial protection has any counterpart in the natural events of peritonitis. We believe our observations to show that it has.

We can draw no hard and fast line between intestinal obstruction and peritonitis. Every case of obstruction may be regarded as an early stage of peritonitis, for to that end it will undoubtedly come if unrelieved, either by perforation or the wandering of organisms through the damaged intestinal wall. Similarly a quantity of blood or other sterile fluid, too large to be safely disposed of by absorption or encapsulation, will sooner or later be the cause of peritonitis, the organisms arriving we do not know exactly how, but in all probability from the intestine thus irritated by its presence. We have been struck with the extreme ease with which organisms do make their way into the peritoneal cavity in many abnormal conditions, even in the early stages of congestion in many cases of obstruction. The organism which, as we have shown in a very large number of cases, usually is the first to make its appearance in the peritoneal cavity is the staphylococcus albus. We have found it in almost every variety of peritoneal lesion which has come under our notice. As a general rule it is to be found on the peritoneal surface at a distance from the focus of most severe disturbance and in association with numbers of phagocytes. It is an organism of very low virulence. Present in many cases of intestinal obstruction and of strangulated hernia it does not produce, when once the obstruction has been relieved, fatal peritonitis and rarely suppuration of the parietal wound; present beyond the area of acute infection in cases of appendicitis it produces no spreading peritonitis when the abscess has been opened or the appendix removed; present invariably in the bloody exudate of ruptured tubal pregnancy it produces in most cases nothing more than a febrile disturbance of little moment. In guinea-pigs it can be inoculated intraperitoneally without fatal effect. The effect which, as we have seen, it does produce is to determine the advent of numbers of phagocytic cells. Again, in cases of spreading peritonitis the outlook is better when this organism is found beyond the area of most intense infection in a remote region of the peritoneal cavity.

All these facts lead us to the conclusion that the staphylococcus albus exercises some sort of protective action in peritonitis and that by determining the advent of phagocytes. It, therefore, in nature, takes the place of those chemical substances which have been found by Miyake and others to be capable of producing an artificial immunity. How or why this staphylococcus appears upon the scene we do not know and we are unable even to hazard a guess.

Having arrived, however, it seems to provoke the appearance of a clear fluid exudate which soon becomes turbid from the presence of innumerable phagocytic cells and the more turbid it becomes the more it appears to the surgeon as something to be washed away. Later the more virulent organism, in the majority of cases the colon bacillus, appears, and it is upon the start, so to speak, which the staphylococcus has had, and the ability of the individual to

respond to the call, that the prognosis to a large extent depends, provided that the natural safeguard is not interfered with by violent treatment. Generally speaking, we conclude that if in a case of peritonitis the staphylococcus albus is found alone in a remote region of the peritoneum the outlook is much better than if it is found in association with the colon bacillus, and that if the colon bacillus is found alone in this remote region the patient will die.

As the staphylococcus albus is usually the first to appear, so it is the last to disappear when the individual has overcome the infection, for it has been found to persist in some cases in the peritoneal cavity long after the other organisms have vanished. This may serve to explain the comparative rarity with which acute infective appendicitis occurs if there have been previous attacks. By far the largest number of the so-called fulminating cases of appendicitis are first attacks.

There is a second way in which the staphylococcus albus may be regarded as having a protective action and that is by assisting the formation of adhesions. In many cases cultures taken from the midst of recent peritoneal adhesions, in the stage when they exist only as coagulated fibrinous exudate, show this organism to be present. A good instance of this, in our series, was a case of dysenteric hepatic abscess with adhesion formation. From what we have stated the question naturally arises whether it is possible to form an opinion as to the probable course of a case of peritonitis from an examination of the exudate. Culture methods, from the time consumed, would be of little value, although the colon bacillus can be identified in as short a time as three hours from broth cultures incubated at 37° C., but we believe that it is possible to make a prognosis from the microscopical examination of films taken from a remote region of the peritoneum. If phagocytic cells are abundant and if cocci, other than streptococci, are present the prognosis should be favourable. If bacilli also are present, but if cells are abundant and cocci predominate, the outlook is more grave but not necessarily hopeless. But if cells are scanty and disintegrated and bacilli are alone or predominate, or if streptococci are present, then the case may be regarded as hopeless.

As a result of our observations we have been led to formulate a theory which appears to us to explain many of the phenomena of peritonitis. In every class of case we have found the staphylococcus albus to be the first organism to appear in the peritoneal cavity and it is only reasonable to assume that it makes its way out, if, indeed, it does come from the intestine at the point of most severe damage. But where the damaged intestine is of large extent, as in a volvulus, for example, we find that organism distributed indiscriminately over a very large area of gut surface. It seems probable, therefore, that as soon as the intestine becomes distended and congested the organism makes its way out at any and every point, to be followed at a later period, if the obstruction is unrelieved, by other organisms, notably the colon bacillus. Similarly, in peritonitis of intestinal origin due to causes other than obstruction we believe that organisms make their way out, not only at the primary focus but also from each successive portion of intestine as it becomes inflamed and distended. If this is so, then several of the phenomena of peritonitis are accounted for which otherwise it is difficult to explain. First, it accounts for the rapidity with which a vast area of peritoneal surface becomes involved, and that in spite of any paralysis which may be present. Secondly, that the stimulus for the advent of enormous masses of phagocytes is rapidly applied over a large area. Thirdly, that the staphylococcus albus is so frequently found in advance of the other organisms present. Fourthly, that we so frequently find organisms on the surface of the gut but not always, in the same cases, in the exudate. They are practically never found in the exudate when they are not present on the gut surface. This is an observation which has been made by other observers, notably Durham, who attributed it to the deposition of organisms from the exudate upon the peritoneum, in much the same manner that organisms tend to settle to the bottom of a culture tube in which they are growing. Lastly, this view explains how it is that in a subsiding peritonitis residual abscesses may be formed in any situation and without any direct connexion with the original focus of infection.

PERITONITIS ARISING FROM INFLAMMATORY DISEASES OF THE FEMALE PELVIC ORGANS.

No instance of puerperal peritonitis has come under our notice but we may accept the statement which has been made by a large number of observers that such cases are of streptococcic origin, and, indeed, clinically they resemble the examples of streptococcic peritonitis arising from other causes which we have examined. The peritonitis which arises from a pyosalpinx is of quite a different character and neither the clinical course nor the bacteriological findings in our cases support the view that the inflammatory condition in salpingitis favours the development of pyogenic organisms other than the gonococcus and that it is these organisms which give rise to the peritonitis.

The causal relation of the gonococcus to peritonitis is one which, although difficult of proof, may be considered to have been definitely established. Wertheim as long ago as 1891 showed that the gonococcus could produce a localised peritonitis in animals. He recovered this organism in pure culture from the seropurulent exudate. Kelly, in 1898, however, stated that in many hundreds of bacteriological examinations he had never been able to demonstrate the gonococcus as the etiological factor in the production of septic peritonitis. In one of his cases he writes: "A pyosalpinx had ruptured some days before the operation and pus containing myriads of gonococci lay free in the pelvis but there was no peritonitis." In the following year, however, Cushing published two cases of gonorrhœal peritonitis which were operated upon and recovered. In both of these gonococci were demonstrated in films of the peritoneal exudate and from one he grew the gonococcus. No other organisms were found. Hugh Young has succeeded in cultivating the gonococcus upon the same medium from cases of gonorrhœal peritonitis. The bacteriological evidence afforded by the few cases in which the organism has been demonstrated definitely by culture methods is supported by many others in which Gram-negative intracellular diplococci have been found in films of the peritoneal exudate but where cultures have remained sterile, and by others, again, of a definite peritonitis dependent upon salpingitis in which no organisms have been demonstrated, for these cases go at any rate to show that such a peritonitis is not dependent upon any of the easily cultivated pyogenic organisms.

In five out of eight cases examined cultures from the peritoneal exudate and from the interior of the tubes were found to be sterile, although numerous culture media were employed—namely, broth, agar and blood agar, and glucose broth for anaerobic cultures. In one case, however, large numbers of diplococci, chiefly intracellular, were found in film preparations from the peritoneal exudate and also from the interior of the Fallopian tube. The organism failed to retain Gram's stain, although the morphological characters of the coccus were not absolutely typical of the gonococcus. It is most probable, however, that the organism was the gonococcus, although we failed to cultivate it. This is the only case in which probable gonococci were found. In one case we isolated the staphylococcus albus from a localised intraperitoneal abscess connected with a left pyosalpinx. In the other cases we failed to cultivate any micro-organism from either the peritoneal exudate or from the interior of the tubes. This is of interest owing to the recent views which we have already referred to—namely, that salpingitis is frequently due to the common pyogenic cocci.

We have four examples of diffuse peritonitis spreading from a pyosalpinx. The onset was sudden but the progress of the symptoms was not very acute, the interval between onset and operation being 5, 10, 14, and 20 days respectively. In two the pulse-rate was 120 before operation, with elevation of the temperature to 102° F.; in the other two the temperature was only slightly above the normal and the pulse was not accelerated. In all there was an odourless peritoneal exudate, clear in three, slightly turbid in one, and in each instance it was distinctly viscid. The peritoneum was reddened in the neighbourhood of the uterine appendages but there was no intestinal distension—a point of interest in view of the fact that no organism could be cultivated from the exudate. In two of these cases intracellular diplococci were seen in the film preparations but all remained sterile to cultivation whatever medium was employed. The treatment was the same in each instance—namely, removal of the Fallopian tube, lavage of the pelvis with sterile saline solution, and drainage—and all the patients recovered. We consider these four cases to be examples of diffuse gonorrhœal peritonitis.

We conclude that the gonococcus causes a peritonitis which may be diffuse or localised; that it possesses a very slight degree of pathogenicity when introduced into the peritoneal cavity; that although the onset may be sudden the subsequent symptoms are those of a very low form of peritonitis; that intestinal distension is usually absent; and that the prognosis is very favourable. We believe the relatively low rate of mortality in these cases to be due not to any special properties of the pelvic peritoneum, but to the low degree of virulence possessed by the organisms present in the Fallopian tubes. Andrews, in 1904, published the results of bacteriological examinations of the interior of the tube in 684 collected cases of pyosalpinx. The diagnosis in most instances was based upon microscopy only; in some upon both films and cultures and in a few upon animal experiments. The result showed 5 per cent. to be sterile, 22·5 per cent. to contain the gonococcus, 6 per cent. saprophytes only, and the rest a variety of pyogenic organisms. It is true that these figures are based largely upon very incomplete bacteriological examinations and must therefore be received with a good deal of reserve but they go to show what a small proportion of cases of pyosalpinx constitute any grave danger to the peritoneum.

Peritonitis arising from suppurating ovarian cysts.—Of these we have examined three cases. In two the lethal organism proved to be the colon bacillus; in the third the streptococcus pyogenes. These three cases present several points of interest. In the first place the colon bacillus may be the cause of a fatal peritonitis arising from a lesion wholly unconnected with the intestinal tract. In one example it was already present in the peritoneal cavity at a distance from the original lesion when the operation was undertaken; in the other there was no diffuse peritonitis at the time of operation, but doubtless the colon bacillus, liberated by opening the abscess, infected the peritoneum. The third case was one of streptococcus infection of an ovarian cyst and the resulting peritonitis followed the usual course of a streptococcic peritonitis. In the two cases in which the peritonitis was diffuse at the time of operation the staphylococcus albus was present in a part of the peritoneal cavity remote from the point of most intense inflammation, and here the intestines were distended. In this respect these cases are strictly comparable to many of the cases of peritonitis arising from other lesions, notably from disease of the vermiform appendix.

INTESTINAL OBSTRUCTION

The simplest form of peritonitis arising in connexion with the bowel is that which results from the early stages of intestinal obstruction. We have studied 100 cases of intestinal obstruction from the bacteriological point of view and have found micro-organisms present in 48 instances. The 47 cases of strangulated hernia which are included in this series will be considered separately because the mechanical conditions present render it impossible to ascertain the condition of the peritoneum at a distance from the site of the obstruction. It has long been known that the fluid in the sac of a strangulated hernia may contain micro-organisms.

[Previous observers—namely, Nepveau, 1867; Garré, 1886; Clado, 1889; Bönnecken, 1890; Tavel and Lanz, 1893; and Rodella, 1903—were here referred to.]

Our tables include 47 cases of strangulated hernia. Coverslip preparations were made of the fluid in the hernial sac in 33 of these cases, in 31 of which no micro-organisms were seen, but in one case Gram-positive cocci and Gram-negative bacilli and in the other Gram-positive cocci only were found. In 42 cases the fluid in the hernial sac was found to be sterile. In five cases micro-organisms were present; in one case the bacillus coli was obtained in pure culture; in another case the bacillus coli and the staphylococcus albus; and in a third case the bacillus coli and a Gram-positive staphylococcus. A bacteriological examination was made from the surface of the intestine in 45 cases and this was found to be sterile in 29. On ten occasions a pure culture of the staphylococcus albus was obtained; in one case the staphylococcus cereus albus; in three the bacillus coli; in one the bacillus coli and the staphylococcus albus; and lastly, in one case the bacillus coli and a Gram-positive staphylococcus. Anaerobic cultures were taken on eight occasions and were found to be sterile after several days' incubation at 37° C. in seven, while in the eighth case a pure culture of the staphylococcus albus was obtained.

It will be obvious that the most important point is the frequency with which the staphylococcus albus has been found on the surface of the intestine in comparison with its presence in the sac fluid. In no less than ten cases this coccus was isolated in pure culture from the surface of the intestine, whilst we failed without exception to find it in the sac fluid. A bacteriological examination of the fluid alone would have led us to the erroneous conclusion that out of a total of 47 cases of strangulated hernia of all classes no less than 42 were completely sterile. This alone shows how careful we should be before we make use of terms such as "chemical peritonitis" or "peritonitis serosa."

The detailed results of our observations having been given there remain several general considerations which may now be examined. Micro-organisms were present in 33 per cent., the staphylococcus albus was found in 23 per cent., and the colon bacillus in 10 per cent. It is well known that as a general rule the proportion of gangrenous cases bears no direct relation to the duration of strangulation of the hernia because the tightness of the constriction, the presence of a protective pad of omentum, and other circumstances exert a controlling influence. But when examined bacteriologically the time element does appear to be of some importance. In those cases where the strangulation was of under one day's duration 86·6 per cent. were completely sterile; between one and two days, 55·5 per cent.; between two and four days, 50 per cent.; and over four days, 46 per cent. These figures show a steady decline in the proportion of sterile cases with the increase in length of the strangulation. The presence of the colon bacillus, however, appears to be unaffected as it was present once in each of the periods named. We have also endeavoured to ascertain whether previous taxis had any influence on the bacteriology but although it undoubtedly influences the appearance of the gut, particularly with regard to hæmorrhage into its wall, yet it seems to bear no relation to the bacteriology of the sac contents.

If the class of hernia is considered the result as regards the bacteriology is somewhat striking, for from inguinal herniæ organisms were obtained in 22 per cent., from femoral hernia in 46 per cent., and from umbilical herniæ in 60 per cent. Of the seven fatal cases no less than four were sterile and died from causes other than peritonitis. One case in which the staphylococcus albus was the only organism present died from obstruction by adhesions at the site of anastomosis, and at the necropsy there was only a little peritonitis immediately around the anastomosis. The two instances in which the colon bacillus was present died almost immediately after the operation, and at the necropsy a condition of diffuse peritonitis was found.

Whenever the colon bacillus was found in a case of strangulated hernia it was isolated both from the sac fluid and from the surface of the intestine. The staphylococcus albus, on the other hand, was never present in the sac fluid when it was absent from the peritoneal surface.

The relation of the bacteriology of the sac contents to the healing of the wound is one of interest. Apart from the cases where the colon bacillus was present the staphylococcus albus was found in pure culture on ten occasions. Not one of these cases suppurated. The three which did suppurate were completely sterile as regards the contents of the sac at the time of operation, so that the suppuration must have been due to extraneous infection. If the colon bacillus is present, then the probable outcome of the case will be death from diffuse peritonitis, but occasionally, under certain conditions, the result of its presence may be only suppuration of the wound. If the colon bacillus, however, is not present, then whatever may be the appearance of the gut there is no reason, *per se*, why a case of strangulated hernia should suppurate. Whilst we are fully alive to the fallacy of drawing general conclusions from a small number of cases we consider it to be at least suggestive that not a single case in which the colon bacillus was not present at the time of operation was followed by gangrene, perforation, or obvious peritonitis. We use the term "obvious" because we believe that peritonitis which shows little or no signs, and which is unattended by serious results, is of far more common occurrence than is usually believed. In the prognosis, then, the presence or absence of the colon bacillus is the factor of vital importance and this observation is of great interest in tracing the rôle which this organism plays in the vast majority of cases of peritonitis arising in connexion with the intestinal tract.

In the 53 cases of intestinal obstruction other than strangulated hernia micro-organisms were present in 30 instances. If we divide the cases into two periods, taking

those of under 50 hours' duration in the first and those of over 50 hours in the second, there is a striking difference in the proportion of sterile cases. Of the 19 in the first class only four were sterile, whilst of the 34 in the second class 19 were sterile. Expressed in percentages, these in the first class—that is to say, the most acute—were infected in 79 per cent., whilst those belonging to the less acute class were infected in only 44 per cent. If we consider the situation of the obstruction and divide the cases according to whether the obstruction involved the small or the large intestine we find that where the small intestine was implicated 63 per cent. were infected, whilst in obstruction of the large intestine only 44 per cent. were infected. We are of opinion that the more frequent sterility of strangulated herniæ is due to the relatively smaller area of intestine available for examination. Believing as we do that organisms make their way out, not only at the site of most severe damage but also from all parts of the bowel as it becomes distended, we see that with the larger area afforded by the general peritoneal cavity the more likely are we to find organisms in the general cavity than in the sac of a hernia. Of the bacteriology of the general peritoneal cavity in strangulated hernia we know nothing but we believe that organisms would be found to be present there just as in other cases of obstruction were we in a position to investigate the question.

The character of the exudate in intestinal obstruction, from whatever cause arising, is remarkably uniform, although the amount varies considerably. This variation appears to depend upon the acuteness of the obstruction, so far as the quantity can be estimated at the time of operation. As a rule it appears to be most abundant in intussusceptions which are perhaps the most acute cases in our series. In no case was the turbid fluid observed, which will again be referred to in dealing with appendicitis. In the film preparations of the exudate polynuclear cells were rarely seen, whilst mononuclear and endothelial cells were often present. Micro-organisms were only twice seen in cases where the cultures proved sterile. In these two polynuclear cells were present and the organisms were intracellular. The 14 cases of intussusception form a group of particular interest and will be considered separately.

We now give in a tabulated form the results which have been obtained in 53 cases of the peritonitis which is associated with intestinal obstruction.

—	Peritoneal exudate.				Intestinal surface.			
	All cases of intestinal obstruction.	Intussusception.	Obstruction apart from intussusception.	The *acute* cases of obstruction.	All cases of intestinal obstruction.	Intussusception.	Obstruction apart from intussusception.	The *acute* cases of obstruction.
Number of cultures examined	49	13	36	5	50	14	36	6
Number sterile	39	9	30	3	22	3	18	0
Number of cases in which micro-organisms were found ...	10	4	6	2	28	11	18	6
Number of cases in which the staphylococcus albus was isolated by itself ...	7	3	4	1	20	10	10	3
Number of cases in which the staphylococcus albus was isolated with other organisms	1	1	0	0	2	1	1	0

Analysis of the fatal cases is as follows. Of the 53 cases of obstruction from causes other than strangulated hernia 22 died. Of these, ten were completely sterile at the time of operation. We may rule out of account those that died from causes other than peritonitis, which are seven in number. Three cases, sterile at the time of operation—one an intussusception, one a carcinoma of the cæcum, and one a gall-stone impaction—died from peritonitis. In the case of the intussusception the peritonitis was due to subsequent perforation. In both of the other examples the obstructed bowel had been opened during the operation and doubtless the peritoneum had received its fatal inoculation by that means. The explanation lies in the exalted virulence of the organisms present in obstructed bowel. Operations of resection or of short-circuiting performed during the existence of acute obstruction are attended by a higher death-rate than when done in a condition of intestinal repose. Corner has expressed the belief that the leakage of an anastomosis is not due to imperfect suturing so much as to infection along the stitches, and this view is upheld by the bacteriological facts. It is therefore on bacteriological grounds as well as on those of practical experience that one should as far as possible avoid opening the bowel during acute obstruction. If it becomes necessary to empty coils of intestine in order to be able to proceed with the operation grave additional risk is run. If resection or colotomy has to be performed they should be rendered as far as possible extra-abdominal manœuvres by appropriate suturing and packing.

In six of the 53 cases of obstruction the colon bacillus was present in the peritoneal cavity at the time of operation and of these not one recovered, death occurring in from a few hours up to the third day with one exception in which the fatal issue was delayed until the eighth day. This exception is of great interest. It was a case of carcinoma of the colon in a woman, aged 50 years, whose obstruction had been chronic for six weeks and acute for several days. The staphylococcus albus and the colon bacillus were isolated from the gut surface and the staphylococcus albus alone from the exudate at a distance. There was a minimal amount of clear fluid present, whilst the intestines were greatly distended and reddened. Colotomy was performed. Death took place on the eighth day and at the necropsy there was found a condition of universal peritonitis.

Prognosis.—We doubt whether a prognosis of much value would be derived from examining film preparations of the peritoneal exudate in cases of intestinal obstruction. All that we can say with any feeling of security is that positive evidence of the presence of the colon bacillus in the general peritoneal cavity affords sufficient ground for giving an extremely grave prognosis. Negative evidence, however, is of rather less value because it does sometimes, though rarely, happen that the colon bacillus makes its appearance after the obstruction has been relieved, as in one of our cases of intussusception. If the intestine has been opened during the operation then the bacteriological examination of the peritoneum is of no value whatever in indicating the probable termination of the case.

PERITONITIS DEPENDENT UPON APPENDICITIS.

Although the usual clinical distinctions are found by bacteriological examination to be only approximately accurate, we have found it convenient to follow that classification for the purpose of enumerating the 93 cases which we have examined. These are therefore considered under the headings of "diffuse peritonitis," "local abscess," "secondary complications," and "interval cases." The cases of acute appendicitis, other than those of local abscess, we have divided according to whether there was or was not a definite perforation present. In the one class are included some cases of gangrene and some of deep ulceration where the peritoneal tissue alone formed the wall; in the other are all degrees, from the minute perforation found only on close examination up to a complete diruption of the appendix. Our object has been to ascertain the bacteriological condition of the peritoneum as far away from the appendix as possible as well as in its immediate neighbourhood. We have now to inquire how far the results harmonise with the clinical aspect of the cases.

Acute non-perforative appendicitis.—In three instances operation was undertaken before bacterial infection of the peritoneum had occurred. These were operated upon respectively 20, 27, and 48 hours after the onset of the illness and all of them presented very acute symptoms, the pulse-rate being increased out of proportion to the height of the temperature. In only one case was any exudate seen and this was a small quantity of almost clear fluid which microscopically contained enormous numbers of polynuclear cells. In each case the intestines in the lower part of the abdomen were reddened and distended. The appendices were remarkably unlike one another. One was a large, extremely thin sac containing pus, with a few flakes of lymph on its surface. Another was small, very œdematous, and of a bright red colour, with a small flake of lymph on its surface. The third was large, of uniform black colour, with a shiny peritoneal surface. There was no bleeding from the mesentery when cut across and the appendix was rigid, so that there was evidently thrombosis throughout the

organ. On section the walls were found to hold myriads of micro-organisms.

Of these three cases one proved fatal from peritonitis, which was in all probability due to the fact that the distended small intestine was opened in order to empty it and to introduce magnesium sulphate into it. It may, of course, be said that the infection took place in removing the appendix, but we consider this not so probable, as the same method of removal—namely, by means of the clamp without opening the lumen—was in each instance employed and by the same operator. At the necropsy the stump was found secure. Moreover, evisceration and thorough irrigation were employed in the fatal case, whereas dry sponging was the method used in the other two. To this point attention will be directed later. In the other two cases no drainage was employed and the wounds healed by first intention.

In eight of the 11 non-perforative cases the peritoneum was found to be infected at the time of operation. In one instance the staphylococcus albus was the only organism present. The patient was a boy, 17 years of age, with a history of four days' illness. The pulse was 88 and the temperature was 102° F. The staphylococcus albus was isolated from the surface of the acutely inflamed appendix. The peritoneal exudate contained polynuclear and endothelial cells and the peritoneum at a distance was sterile. There were no adhesions. The appendix was large and swollen and in places exhibited necrotic patches. It was removed, the peritoneum in the neighbourhood was carefully sponged, and the abdomen was closed. Recovery was uneventful except that the wound suppurated.

In three instances the colon bacillus was the only organism found. One of these recovered but in this case, unfortunately, only the region of the appendix was examined bacteriologically, whilst the turbid, non-smelling fluid at a distance was not investigated. In this instance the illness had lasted only 24 hours. After removal of the appendix the peritoneum was treated by local dry sponging and drainage and the patient recovered. The second case was of three days' history in a boy, aged 13 years. Two types of exudate were present; in a remote region it was turbid and odourless, showed in film preparations large numbers of polynuclear cells but no organisms, and was sterile; in the immediate neighbourhood of the appendix, but not in a localised abscess cavity, there was thick offensive pus, which showed in films only Gram-negative bacilli and on cultivation grew only the colon bacillus. The appendix was removed and the peritoneal cavity was washed out and drained. Death took place on the tenth day and at the necropsy there was found a condition of universal purulent peritonitis. The third case was that of a child, three years of age, with a history of ten days' illness. The pulse was 150 and the temperature was 100°. At a distance from the appendix there was a quantity of turbid brownish fluid which in films showed polynuclear cells and Gram-negative bacilli but no other organisms. In cultures only the colon bacillus was grown. Immediately round the appendix, which was gangrenous but not perforated, there was thick foul pus, from which also the colon bacillus alone was obtained. The appendix was removed and the abdomen was washed out and drained but death occurred in a few hours.

In the remaining four cases of non-perforative appendicitis more than one organism was found: (1) bacillus pyocyaneus and staphylococcus albus both remotely and close to the appendix; (2) bacillus coli, staphylococcus albus, and staphylococcus aureus in both regions; (3) bacillus coli and a staphylococcus in both regions; and (4) staphylococcus albus alone at a distance and bacillus coli together with staphylococcus albus close to the appendix. The first three proved fatal but the fourth recovered after a severe struggle.

Perforative appendicitis with diffuse peritonitis.—We have examined 17 examples of this condition, the duration of the illness having varied from 36 hours to nine days. All were cases of what is usually called "general peritonitis" but the extent and degree of the peritoneal involvement varied considerably. In every case the changes were most intense in the right iliac fossa, and in those of longer history as a rule there had apparently been an abortive attempt at localisation, the thicker pus immediately round the appendix being feebly dammed back from the rest of the peritoneal cavity by agglutination of intestinal coils. In the worst cases of all there was no adhesion of any kind and the perforated appendix lay quite free in the peritoneal cavity. The exudate varied greatly in quantity and quality. In some there was no difference between that immediately round the appendix and that in the remote upper part of the abdomen; in others, again, there was a very distinct difference between the foul pus round the appendix and the turbid odourless fluid in the upper part. It is this turbid exudate to which we attach great importance from the point of view of prognosis; it is similar to that produced by experimental inoculation of the staphylococcus albus into the peritoneal cavity of guinea-pigs; it contains innumerable phagocytes.

In every case but one the colon bacillus was found free in the peritoneal cavity in the neighbourhood of the appendix, the one exception having the bacillus pyocyaneus and no colon bacillus. The peritoneum, at a distance, was investigated 15 times; on one occasion the odourless fluid around the spleen was sterile both in films and cultures, whilst the films showed many polynuclear cells. In one the staphylococcus cereus albus was alone present, in one the streptococcus pyogenes, and in one the staphylococcus albus and the colon bacillus. The colon bacillus was found alone on ten occasions. The relation of cover-slip examinations to culture methods, upon which so much stress is laid by those who regard the colon bacillus as of secondary importance, has been discussed elsewhere, but it is worth while in this place to draw attention to a striking point brought out by this series—namely, that on the one occasion in which streptococci were seen in the films they were also recovered culturally.

There does not appear to be any constant relation between the length of history of the illness and the bacteriological results. The colon bacillus may be found in a remote upper part of the peritoneum in less than 48 hours from the onset and, on the other hand, such a region may be sterile after five days' illness.

In discussing the result of treatment we consider together all the cases of diffuse peritonitis, both perforative and non-perforative, and these make up a total of 28. In 14 of these cases the colon bacillus was present in the exudate at a distance from the cæcal region; only three recovered. Two, in which the colon bacillus was found alone, were treated by appendicectomy, local dry sponging of the peritoneum, and drainage; the third had the staphylococcus albus present as well as the colon bacillus and was treated by removal of the appendix, general peritoneal lavage (but without evisceration), and drainage. Of the 11 fatal cases not one was treated by dry sponging but all by copious peritonea lavage, assisted, in the majority, by evisceration. These 14 cases, then, show a mortality of nearly 80 per cent. Now how do these results compare with the general run of cases of which we do not know the bacteriology? During the five years from 1899 to 1903 there were operated upon at St. Thomas's Hospital 119 cases of appendicitis with diffuse peritonitis. 100 were treated by washing the peritoneum with large quantities of sterile water or normal saline solution and of these 80 died. The remaining 19 were treated locally although the peritonitis was diffuse—that is to say, only the intestines in the neighbourhood of the cæcum were either sponged or washed over whilst the upper part of the peritoneal cavity was not interfered with, and of these ten died. The mortality, then, for general lavage is 80 and for local lavage or dry sponging only 47 per cent. It may be pointed out that perhaps only the less severe cases were treated by local cleansing but our reply is that we now know it to be impossible from examination at the operation to estimate the extent of the peritonitis, still less the nature and virulence of the infecting organism, so that selection of that kind is impracticable. On the contrary, the cases which our bacteriological examinations have taught us to be the less fatal are often the very ones which appear from the amount of the exudate to be the most severe and which would therefore probably receive the more energetic form of treatment.

The cases which have been operated upon by one of us, acting at various times for the surgeons at St. Thomas's Hospital, illustrate our point in a somewhat striking manner. Out of a total of 25 cases, 19 were treated by evisceration and thorough washing of the peritoneal cavity, the upper part being dealt with as thoroughly as the lower, and of these 18 died. The remaining six were treated locally, leaving the upper region of the peritoneal cavity undisturbed, and every one recovered. These cases were in no way selected, as, with one exception, they are the last cases in the series. One patient, in fact, was marked out for this line of treatment by the severity of his general condition, because he was much

too ill to stand extensive manipulation. This was the case of a youth, aged 19 years, who had been ill for four days. The appendix was gangrenous and perforated; the intestines were everywhere inflamed and distended and bathed with turbid fluid which, odourless in the greater part, was of the usual smell in the region of the appendix, although not shut off by adhesions. The appendix was removed and the cæcal region was dry sponged and drained. The patient was extremely ill for two or three days but ultimately made a complete recovery.

An almost exactly similar case, treated differently, had a different result. A patient of the same age as the last had been ill for five days. The appendix was perforated and the intestines were everywhere red and distended. A large quantity of turbid odourless fluid was free in the peritoneal cavity even round the spleen. This exudate was thoroughly washed away with large quantities of saline solution, the appendix was removed, and the abdomen was closed. Death took place on the fourth day and at the necropsy a condition of universal peritonitis was found. Now the exudate was in this instance examined in two situations both by films and cultures. About the spleen it showed polynuclear and mononuclear cells but no organisms and remained sterile on cultivation. Close to the appendix the exudate showed polynuclear cells and Gram-negative bacilli only and grew both aerobically and anaerobically the colon bacillus only. There can be little doubt that in this instance the interference with the sterile upper region of the abdomen not only spread the infection over a previously unaffected part but also washed away the phagocytic cells upon which the chief possibility of recovery depended.

Appendicitis with definitely localised abscess.—The bacteriology of the pus from a localised abscess is of little clinical interest, being practically the bacteriology of the intestinal contents. The very fact that it has become localised is evidence of a sufficient degree of power of resistance on the part of the patient. The peculiarly disgusting smell of the pus cannot be said to be characteristic of any particular organism. Veillon and Zuber consider it to be due to the various anaerobic organisms which they have isolated and Tavel and Lanz attribute it to what they term the pseudo-tetanus bacillus. Four of our abscess cases, or 10 per cent., failed to show evidence of the colon bacillus, whilst the bacillus pyocyaneus was isolated from three of these four cases.

The condition of the peritoneum beyond the abscess, however, is of considerable interest. In most of our cases the abscess being adherent to the abdominal wall it was impossible to examine the peritoneum beyond but in 16 instances the pus had to be reached through the general peritoneal cavity and these we examined bacteriologically. Nine proved sterile, whilst no less than seven grew a pure culture of the staphylococcus albus. In most cases there was an appreciable quantity of clear odourless fluid in the peritoneal cavity and as a rule the intestines and omentum in the immediate neighbourhood of the abscess were reddened and a little distended. Of the total number of 40 cases of local abscess only two died, neither from diffuse peritonitis. It appears that the opening of an abscess which is not adherent to the abdominal wall, provided that the peritoneal cavity is efficiently packed off with gauze, which is left *in situ* for two or three days after operation, is attended with little if any additional risk.

We were fortunate to observe two cases of appendix abscess which had to be reached through the peritoneal cavity, operated upon on the same day by the same surgeon and in precisely similar circumstances, a comparison of which offers significant support to our contention regarding the staphylococcus albus. One was that of a man, 34 years of age, who had had two previous attacks of appendicitis and had on this occasion been ill for 14 days. When admitted the temperature was 103° F. and the pulse was 100. The other was a boy, aged 13 years, in his first attack, who had been ill for five days. His temperature was 103° and his pulse was 112. In both cases the abscess was situated to the outer side of the cæcum. The general peritoneal cavity was first opened and in each instance contained a small quantity of clear odourless fluid, from which cultures were made. The peritoneal cavity was not packed off in either case but the abscess was opened and a drainage tube was inserted. From the foul pus the same organisms were obtained in both cases but the man's peritoneal exudate gave a pure culture of the staphylococcus albus, whilst the boy's was sterile. The subsequent progress was very different in the two cases. On the following morning the man was remarkably well; his temperature was 100·8°, his pulse was 88, the abdomen was soft and moving well, and there was no sickness or intestinal distension. Recovery was rapid and uninterrupted. The boy, on the other hand, presented a strikingly different picture. He looked seriously ill, with anxious facial expression, sunken eyes, and vomiting. The pulse was 142 and the temperature was 100·8°. The abdomen was rigid, moved badly, and was distended. Aperients and enemata were given with good result and on the morning of the third day the condition had begun to improve. The subsequent progress was good and recovery ensued.

There is a class of cases intermediate between the local abscesses on the one hand and the most acute perforative cases on the other, calling for special attention because of the difficulty to which they give rise regarding the advisability of immediate operation. Opinion has gradually come round to the view that operation should be done upon nearly every case of appendicitis as soon as the diagnosis has been made, but the period about which alone any serious discussion still lingers is the period which lies between the second or third and fifth or sixth days. These are the cases in which nature is carrying on a hard fight against the invading organisms and the event hovers in the balance between the formation of a local abscess, when the natural protective forces may be said to have triumphed, and the rapid diffusion of the peritonitis which will if left alone lead inevitably to a fatal issue. The question whether at this stage nature can be assisted by surgery is one of the most difficult which the surgeon is called upon to answer. We therefore turn to bacteriology to see whether any light is shed by it upon the question.

There are six cases in our series which may fairly be said to come under this heading and may be set out thus:—

No.	Sex.	Age (years).	Days of illness.	Exudate at a distance.	Exudate round appendix.	Treatment.	Result.
1	F.	21	Sixth.	Sterile.	Bacillus coli.	General lavage.	Died.
2	M.	18	Seventh.	Staphylococcus cereus albus.	,,	,,	,,
3	M.	19	Fourth.	Bacillus coli.	,,	,,	,,
4	M.	20	,,	,,	,,	,,	,,
5	F.	19	Third.	,,	,,	Local dry sponging.	Recovered.
6	F.	35	Fifth.	Staphylococcus albus.	Bacillus coli and staphylococcus albus.	,,	,,

The conditions common to these six cases were that the colon bacillus was present immediately around the appendix in foul-smelling pus which was feebly shut off from the inflamed peritoneum around by the agglutination of neighbouring coils of intestine or of omentum; and that clinically it was doubtful before, and even at the time of, operation whether the condition was one of diffuse peritonitis or not. In three cases the colon bacillus was already present upon the peritoneum at a distance from the agglutinated area; one was sterile and the other two had staphylococci only.

What would have happened if operation had not been performed it is impossible to say, but it seems probable that the first three would have succumbed to the peritonitis which was already diffuse but not universal, whilst the other three might have formed a local abscess. The most important point, however, which is brought out in this table is that the four cases which proved fatal from universal peritonitis were all subjected to thorough washing out of the peritoneal cavity, whilst the two which recovered, although one contained the colon bacillus beyond the limits of the feebly shut-off pus, were treated by local dry sponging and drainage. We conclude, therefore, that in these doubtful cases which present themselves for treatment after the second day of illness and before the formation of a definitely local abscess, whilst it is impossible to say what the outcome will be if left alone, yet operation may be performed without grave risk provided that every effort is made to limit the

area of operation and to avoid the diffusion of septic material by too energetic treatment.

We now come to cases of infection at a distance from, but dependent upon, appendicitis, and we are able to compare the organisms found in these complications with those of the original disease. We have had the opportunity of examining two cases of subphrenic abscess, four other residual intraperitoneal abscesses, one case of empyema, one of abscess of the abdominal wall, one of acute pleuritis, and one of suppurative parotitis. These cases throw an important light upon the bacteriology of peritonitis originating in disease of the appendix and fall into harmony with our other observations, so that each deserves a brief notice.

Two cases of subphrenic abscess.—The first case was that of a female, 19 years of age, who had been operated upon three weeks previously for an imperfectly localised appendix abscess with diffuse peritonitis. A large quantity of turbid odourless fluid had been found in the peritoneal cavity and the intestines generally were red and distended. The patient was extremely ill at the time and nothing more than simple drainage was done. The turbid fluid proved to be sterile. The pus showed polynuclear cells and no micro-organisms in the films and gave on cultivation only the staphylococcus albus. The temperature kept high, the general condition was one of severe septic poisoning, and at the end of three weeks signs of pressure were noted at the base of the left lung. A large fœtid gas-containing abscess around the spleen was opened and drained. The patient recovered and ten months later the appendix was removed when practically no adhesions were encountered and the staphylococcus albus was isolated from the surface of the appendix. The pus from the subphrenic abscess showed polynuclear cells, groups of Gram-positive cocci, and Gram-negative bacilli. The cultures gave the colon bacillus and the staphylococcus cereus albus.

The second subphrenic abscess occurred on the right side. The patient was a boy, 15 years of age, who had had a localised, gas-containing abscess, from which a concretion escaped, opened 14 days previously. This had been shown to contain the colon bacillus and the staphylococcus albus. The temperature remained high and on the fifteenth day a small subphrenic abscess was opened. The pus contained the colon bacillus, the staphylococcus albus, and the bacillus proteus vulgaris. Two days later the patient died. At the necropsy similar purulent collections were found around the spleen and in the pelvis and the bases of the lungs were necrotic.

Other residual abscesses.—Of the other intraperitoneal residual abscesses two were close to the cæcum. The first occurred in a man, aged 22 years, who had had an abscess drained and the appendix removed two years previously and had been perfectly well in the interval. Films of the pus showed polynuclear cells, Gram-positive cocci, and Gram-negative bacilli. In both aerobic and anaerobic cultures the colon bacillus and the staphylococcus aureus were isolated. The patient recovered. The second was that of a boy, 12 years of age, who had had the appendix removed and the abdomen thoroughly washed out for diffuse peritonitis two years previously and who had been quite well in the interval. The pus from the residual abscess was thick and malodorous. Microscopically it showed Gram-positive cocci, Gram-negative bacilli, and polynuclear cells mostly degenerated. Both aerobic and anaerobic cultures remained sterile. The patient recovered.

Two other residual abscesses, one subhepatic and one on the left side of the abdomen, occurred respectively 17 and 30 days after the drainage of a local appendix abscess. Both contained thick odourless pus which showed polynuclear cells in the films. One, in which the pus was of a greenish colour, also showed a variety of bacilli and cocci, but on cultivation grew only the staphylococcus albus. The other showed exceedingly few bacilli, and these intracellular, and was sterile on cultivation. A case of perforative appendicitis in which the abdomen had been washed out and closed without drainage developed an abscess in the abdominal wall ten days after the operation. The pus contained the colon bacillus and a staphylococcus, both of which organisms had been isolated from the peritoneum. A right-sided empyema which proved fatal in a short time occurred in a man, aged 70 years. The pus showed Gram-positive cocci as well as Gram-negative bacilli but on cultivation grew only the colon bacillus. Post mortem the appendix was gangrenous and there was a large subphrenic abscess but no visible aperture in the diaphragm. A patient who had had an appendix abscess opened three weeks previously showed signs of pressure on the base of the right lung. Exploration for suspected subphrenic abscess was undertaken but no pus was found. Cultures from both pleura and peritoneum gave a pure growth of the staphylococcus albus. A case of left-sided parotitis occurred in a boy, aged 14 years, 24 hours after the opening of an appendix abscess of ten days' duration. The swelling gradually increased and softened and was incised on the fourth day. Soft necrotic tissue in very small amount was found deeply in the gland. Films and cultures were taken. The former showed only cocci arranged in groups and the latter gave a pure growth of the staphylococcus aureus. The right parotid gland was not affected. The patient recovered. Unfortunately we have no bacteriological examination of the pus in the abscess. The patient's serum gave no agglutination reaction with the staphylococcus isolated.

Cases of appendicitis operated upon during a quiet period.—16 such cases have been examined: the peritoneum at a distance in 13, the surface of the appendix in 10, and the interior of the appendix in nine. The peritoneum at a distance was sterile in ten and showed the staphylococcus albus in three. The surface of the appendix was sterile twice and showed staphylococci eight times. The interior showed the colon bacillus alone seven times and staphylococci alone twice. The peritoneum at a distance was sterile in four out of six cases where the previous attack had been of the catarrhal variety; twice only was a staphylococcus found. The operations were performed from one to eight weeks after the attack had subsided. Of the cases where the previous attack had culminated in an abscess and where the patients had returned for appendicectomy with the wounds healed, a much larger proportion—namely, eight out of ten—grew staphylococci. The percentage of sterile cases after abscess formation is only 20, whereas after a catarrhal attack it is 66. The operations were undertaken from two to eight months after the abscess had been opened.

In the whole series of 16 cases suppuration of the abdominal wound occurred only four times and one of these was the case in which the staphylococcus aureus was present on the surface of the appendix. All the patients recovered. In one instance, after an interval of four months, a small collection of thick white odourless pus was found near the base of the appendix amongst some adhesions. From this a pure growth of the staphylococcus albus was obtained.

TREATMENT OF ACUTE PERITONITIS BASED UPON ITS BACTERIOLOGY.

It will be seen that the term "acute peritonitis" embraces a number of inflammatory diseases which differ widely in their symptoms, course, and prognosis. The main factors in these, as in inflammatory diseases of the cellular tissue, are the variety and virulence of the organism which has produced the disease and upon the power of resistance which the individual possesses against it. Unfortunately there is no opportunity of ascertaining what this organism is, in any given case, until after the operation, so that we can only act upon the knowledge of what are the organisms most frequently present in any given class of cases. In gastric and duodenal perforations, in intraperitoneal hæmorrhage, and in pelvic inflammations the organisms are, in the great majority of cases, of a mild type. In intestinal necrosis, on the other hand, it is the virulent colon bacillus which is by far the most common organism. The streptococcus pyogenes and the bacillus pyocyaneus are so uncommon and so uniformly fatal whatever the treatment adopted that it would be wise to treat all cases of peritonitis arising from intestinal necrosis as cases of colon bacillus peritonitis.

It is undoubtedly true that peritonitis of bacterial origin can subside without operative interference.

From what we have seen of the bacteriology of the peritoneum around an inflamed appendix it is impossible to believe that in all cases of appendicitis which subside without operation the peritoneum is sterile. We also believe that in the cases which ultimately culminate in abscess formation the peritonitis was at one time diffuse although no doubt of mild type and slight extent. But such terminations are not events to be reckoned upon, for at the beginning of an attack we can only conjecture what the bacterial infection may be and certainly none can foretell the result. The earlier operation is undertaken, therefore, the less likely is the peritoneal infection to reach a desperate stage. There are few at the present day who do not accept this view but there is still a wide difference of opinion regarding the

extent of the operation which should be performed. Whilst there are those who advocate the most extreme measures of washing assisted by evisceration there are others, notably J. Murphy, who do not employ such drastic procedures. We are of opinion that the extent of the operation required depends upon the bacteriology of the case.

In streptococcic peritonitis, which is the most acute and fatal form that we know, it is doubtful whether any surgical procedure offers a prospect of success, but if there is any chance it must lie in the most thorough possible washing. At least this treatment can do but little harm, for the infective exudate is carried with such rapidity over the peritoneal surface that there is little risk of spreading it over an unaffected area, whilst the phagocytes, which often appear to be powerless against this virulent infection, may be washed away without robbing the patient of what in other forms of peritonitis usually constitute his chief line of defence. Peritonitis due to the bacillus pyocyaneus is of very little less virulence than streptococcic, but it is of rare occurrence and is impossible to detect at the time of operation. In this form, as in the other, the same line of treatment would offer the only possible chance of success, if indeed recovery from this infection is possible.

In the vast majority of cases, however, it is the colon bacillus which is the chief infective agent, and therefore most cases of peritonitis of intestinal origin must be treated as cases of colon bacillus infection. We believe that, from the observations which have already been set out, limited operations should be the rule, because of the mechanical impossibility of cleansing the peritoneum, the risk of washing away the phagocytes in the exudate beyond the area of most intense inflammation, and the danger of spreading infection over unaffected regions. In local treatment the question between local irrigation and dry sponging is of relatively small importance. We are inclined to believe, however, that dry sponging, so long as it is carried out with gentleness, is better than irrigation, because fluid poured into the abdomen is likely to carry infection beyond the area already involved. If those remote regions are already affected then no amount of washing is likely to be of much avail. In the case of mild infections, particularly those due to gastric perforations and intraperitoneal hæmorrhage, the washing should be thorough, with a view to remove the foreign material present, such as the contents of the stomach or blood clot.

The question of drainage is one upon which much has been written, but a great deal of the literature applies to the earlier days of abdominal surgery and concerns not only septic cases but all intraperitoneal operations. In mild diffuse infections, such as gastric perforations, intraperitoneal hæmorrhage, and the early stages of the peritonitis of obstruction, the organisms are comparatively harmless and can be safely dealt with by the peritoneum. It is the rule in such cases where the abdomen has been closed without drainage for the wound to heal by primary union. In severe diffuse infections, on the other hand, there may be said to be more ground for drainage, although one sees many cases recover without even suppuration of the abdominal wall. In many cases of local abscess the conditions are quite different. There is a definite cavity which for practical purposes is extraperitoneal and which can be drained. But where the peritonitis is diffuse the possibility of drainage depends upon the integrity of the peritoneum. In cases where fibrinous deposit is absent or insignificant, as in the gastric perforations, it is possible to drain, but where there is a sticky exudate present drainage becomes impossible because in a surprisingly short time the tube or other form of drain becomes surrounded by agglutinated intestine and omentum and its track becomes merely a sinus—a sinus, moreover, which is not without danger because extraneous organisms, particularly from the skin, have been found to extend with remarkable facility along such tracks. The objection of leaving a weak spot in the abdominal wall also is of some moment. We are therefore presented with the paradox that, apart from local abscesses, the cases which it is most desirable to drain are the very ones where drainage is impossible, whilst those where it is possible it is also unnecessary. In cases of gastric perforation where a tube has been left in the pelvis a large amount of fluid may be discharged during the first one or two days but in cases of appendicitis treated in the same manner it is remarkable how little fluid soils the dressings.

Next in importance to the operative technique in peritonitis comes the question of drug treatment. It is universally recognised that opiates should never be given before a diagnosis has been made on account of the concealment of important symptoms. But when once a diagnosis has been arrived at it is quite a common thing to see opiates given. If, rightly or wrongly, the decision has been arrived at not to operate, then the same objection still holds good, because when the patient is under the influence of opiates changes of vital importance which may at any moment occur are apt to escape notice. But there is an objection of little less importance than these which applies after as well as before operation. In obstructed or inflamed bowel the colon bacillus attains its maximum of virulence and in all probability under these conditions is able to make its way out at points other than the primary focus. It has yet to be proved that intestinal movements play any very important part in the spread of infection over the peritoneal surface. On the other hand, intestinal paralysis spells death, for it is of vital importance that the infective material shall be eliminated from the bowel at the earliest possible moment. A dose of morphine, superadded to the toxic paresis of the bowel, may just turn the balance against recovery. It is therefore obvious that the teachings of bacteriology harmonise with those of clinical experience in pointing to purgatives and not to opiates as the right drugs to be given in peritonitis.

Serum treatment.—The serum treatment of the septic diseases being in its infancy, and, so far, having shown only sporadic promise of the utility to which it may eventually attain, the little that we are able to say of its application to peritonitis can only take the form of speculation. We have endeavoured to show that in the large majority of cases of acute peritonitis it is the colon bacillus which kills the patient. At any rate it is possible to ascertain, in a given case, whether this is so very rapidly by means of cover-slip preparations and even of cultures taken at the operation. We believe that, did we possess a multivalent anti-bacillus coli serum the mortality of peritonitis would speedily diminish. At present we know of no such serum and we can only say here that experiments are in progress with a view to produce a multivalent serum against the various virulent strains of the colon bacillus which have been isolated from our cases of peritonitis. If films of the exudate were to show streptococci we might reasonably hope that one of the more recently produced multivalent antistreptococcic sera would prove of value. But the indiscriminate use of antitoxic sera in peritonitis, without regard to the bacteriology of the individual case, is to be deprecated as being as useless as it is unscientific. At least we have said enough to show that any hope based upon antitoxic sera must lie in the direction of a colon bacillus rather than upon a streptococcic antitoxin.

ABSTRACT OF

The Hunterian Lectures

ON

THE CHANGES PRODUCED BY INFLAMMATION IN THE CONJUNCTIVA.

Delivered before the Royal College of Surgeons of England on Feb. 27th and March 1st and 3rd, 1905,

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LECTURE II.[1]

Delivered on March 1st.

TRAUMATIC CONJUNCTIVITIS WITH SPECIAL REFERENCE TO THE CHANGES IN THE CELLULAR ELEMENTS AS THE RESULT OF WOUNDS.

Wounds of the conjunctiva.—Wounds of the conjunctiva occur as the result both of injury and of operation. Since the introduction of conjunctival flap operations for cataract and glaucoma a knowledge of the process of healing is of great importance, as after the flap is made the wound in the globe is shut off by it from direct communication with the conjunctival sac. Wounds in the conjunctiva are made also

[1] Lecture I. was published in THE LANCET of March 4th, 1905, p. 545.

for the purpose of tenotomy, advancements, &c. Further, the conjunctiva of the bulb being largely free from cellular elements it offers one of the most favourable situations for the study of the early changes of traumatic inflammation, more especially as regards the formation, destination, &c., of the plasma cells, since these latter are of such frequent occurrence in all inflammatory conditions of the conjunctiva. In the course of some other work experimental wounds were made in the conjunctivæ of rabbits. At definite periods these wounds were carefully removed, fixed in alcohol, embedded in paraffin, cut transversely to the wound in serial section, and stained with logwood and dilute eosin and by Pappenheim's stain, the logwood and eosin showing the character of the cells with regard to their nuclei and the acid granules of their cytoplasm whilst the pyronine and methyl green of the Pappenheim stain showed the plasma cells and the various types of connective tissue cells, bacteria, &c. A preparation of rabbit's blood was made by fixing drops of blood in alcohol, embedding in paraffin, and staining by Pappenheim's method —adopting, in fact, the same process as that by which the sections of tissue were prepared.

[The experiments and the microscopic appearances of the sections were then described.]

CONCLUSIONS DERIVED FROM THE STUDY OF THE ABOVE SECTIONS.

A. Regeneration of the epithelium.—As the result of the contraction of the underlying elastic tissue the edges of the epithelium are turned downwards. As the result of the injury a few epithelial cells at the edges of the wound are killed, swell up, degenerate, and are probably either absorbed by the leucocytes or cast off in the discharge. The infiltration of the epithelium with leucocytes and plasma gives increased nutrition to the cells and therefore promotes their rapid division and spread and, further, by the phagocytic power of the leucocytes the destruction of organisms lying between the cells is carried on—a most important point, because although the conjunctiva always contains organisms it is very rarely that a wound of it becomes septic. Proliferation of the epithelium does not seem definitely to commence at the margin of the wound for at least 24 hours, nor could I find any evidence of it elsewhere beyond. The spreading margin is generally one cell deep, thickening taking place rapidly, as the growth of epithelium progresses across the wound. Should the growing epithelium meet obstacles, such as an exudation of lymph, in its endeavour thus to cover the surface, it becomes thickened, producing the peninsula-like processes which eventually dip down into the adjacent subconjunctival tissue and which are often only attached to the surface epithelium by a thin band. It is conceivable that if this band of epithelium subsequently atrophies from pressure of the contracting fibrous tissue it may leave a collection of epithelial cells in the deeper tissue which might become the seat of an implantation dermoid or even undergo malignant change. If the epithelium does not meet on the two sides the healing of the wound may be greatly delayed. The epithelium covers small incised wounds of the conjunctiva in 120 hours.

B. Changes in the subconjunctival tissue.—When the ocular conjunctiva is divided it retracts owing to the elastic tissue in its substance. The underlying episcleral connective tissue coming into the base of the wound the conjunctiva becomes firmly adherent to it in 48 hours, so that, arguing from analogy, it may be concluded that after a flap operation for cataract the wound is usually shut off from the conjunctival sac in that time. Generally some hæmorrhage occurs in which organisms seem to have the power to live, but any which gain entrance to the subepithelial tissue, except those in the blood clot, are taken up by the polynuclear leucocytes unless the wound becomes septic. A practical point, therefore, is to remove from wounds of the conjunctiva as much blood clot as possible. The leucocytes exuded during the first 24 hours are chiefly of the polynuclear type, and these cells possess a highly phagocytic power; indeed, unless sepsis occurs in a wound it is probable that these cells do not appear. After the first 24 hours, provided the wound be comparatively aseptic, the exudation consists practically of mononuclear cells only. Coinciding with this appearance of the lymphocytic exudation in the wound there is a large increase in the plasma cells. These latter cells and the lymphocytes appear around both the large and small vessels on *both* sides of the wound, which at this time have actively proliferating endothelium, and on the side away from the cornea are dilated to their fullest extent; they are also seen around the endothelium and perithelium of the gland tissue which has become incorporated in the base of the wound. The connective tissue cells at the deeper part of the margins of the wound show signs of proliferation. But although there is proliferation of these cells there are no plasma cells or mononuclear leucocytes in their neighbourhood. In the wound of 48 hours' duration the plasma cells have decreased in number and are mostly undergoing degenerative changes; whereas, on the other hand, the connective tissue cells are showing the greatest signs of proliferation, without forming true plasma cells such as are found in the exudation of lymphocytes, although a few scattered plasma cells can be found in the neighbourhood of the new vessels. In the wound of 120 hours' duration there are practically no well-formed plasma cells except in situations where there is still an exudation of lymphocytes.

From all these observations, therefore, it appears to me that the origin of the true plasma cell is probably not the connective tissue cell but that it is derived, with the lymphocyte, directly or indirectly, from endothelium or perithelium.

To recapitulate: 1. The plasma cells make their appearance at the time when lymphocytes appear in the wound, and it is then that they are found in the greatest numbers; the connective tissue cells in the deeper parts of the wound, although commencing to show changes, have practically no plasma cells around them, which seems to me strongly against their origin from the fixed connective tissue cells, but where the perithelium covering the gland tissues comes into the base of the wound it is packed around with plasma cells and mononuclear leucocytes. 2. They are arranged principally around the blood-vessels on both sides of the wound, being found equally near those containing blood and those containing practically no blood, and they are also found within them. Many of the vessels around which the plasma cells and mononuclear leucocytes are found have such thick walls that it is impossible to suppose that they have come through their walls. 3. They begin to disappear in 48 hours, when the lymphocytes decrease, and persist in any number only at the actual site of exudation of lymphocytes. 4. When the connective tissue cells show the greatest activity the plasma cells have to a large extent disappeared and the majority of those which remain show signs of degeneration.

These facts being taken in conjunction with the fact that plasma cells in all stages are to be observed developing from the endothelium, and, as will be shown, that in the lymphatic glands, in which the mononuclear cells are produced, there are found plasma cells, I think the evidence is strongly in favour of the origin of the plasma cell being with the mononuclear leucocyte from a common source, most probably the endothelium or perithelium.

Against the view of the origin of the plasma cell being endothelium, I have examined preparations from the pleura of a rabbit injected 48 hours previously with paraffin. The section showed much proliferation of the endothelial cells on the surface but there were no definite plasma cells lying between them. Directly beneath there were considerable numbers of plasma cells. J. Briscoe,[2] in examining the fluid from the peritoneal cavity of rabbits at various periods after the injection of normal saline solution, had been unable to find any plasma cells. Further, in examining some 15 cases of eyes enucleated for various acute inflammatory troubles I have never been able to find any plasma cells free in the anterior chamber, but in one case of chronic iridocyclitis there were numerous plasma cells present in the deposit on Bowman's membrane. This seems to point to the fact that it requires a special type of inflammation, usually of the very chronic variety, for the production of plasma cells in serous cavities.

Chorioplaques.—This form of giant cell appears in the peripheral parts of the wound in about 120 hours. It is rounded in shape, no doubt owing to the laxity of the connective tissue, and is derived from the plasma cells, its staining reaction and nuclei being similar. It appears as the plasma cells begin to disappear from the wound.

Giant cells proper, which have nuclei similar to the endothelial cells, are also seen in the wound of 170 hours' duration. They are evidently derived from the proliferating endothelium by the division of their nuclei without division of their cytoplasm. Thus in these two cells we have further

[2] J. Orth's Festschrift, 1903.

vidence of the possible relation of the plasma cell to the ndothelial cell.

The blood-vessels.—The blood-vessels show signs of commencing dilatation in six hours and at the end of 24 hours hey seem to reach their maximum. The leucocytes are ound principally around their walls—that is to say, in the eriphery of the blood stream—and the mononuclear varieties re more numerous within the vessels on the corneal side f the wound than in those on the other; cells identical in tructure with lymphocytes and plasma cells can now be een budding off from their walls; at the same time the ndothelium shows signs of proliferation and at the end of 2 hours and at the end of 48 hours a quantity of newly ormed vessels appear in the base of the wound.

LYMPHOID TISSUE OF THE CONJUNCTIVA.

At birth, as has been seen, there is no lymphoid tissue in the conjunctiva—that is to say, the cellular elements are absent, although the connective tissue in the fornices is very loose in structure. I have examined a number of conjunctivæ removed after death from children of various ages, from birth up to the fourth week, in which, so far as could be ascertained, there had been no previous inflammation or any silver nitrate or other irritant applied at the time of birth. At birth the tissue is entirely free from lymphocytes and plasma cells. There is no evidence of the so-called germ areas of Ribbert and hence I think it is possible to exclude this theory in dealing with the conjunctiva. After the first few days these cells begin to appear, chiefly around the vessels of the superficial layer in the superior fornix but also, to a less extent, around the deeper vessels; these cells gradually increase up to the fourth week when the lymphoid layer seems to be fully developed. The fact that these cells appear first in the fornix is probably due to the extreme richness of its tissue in endothelium and perithelium as compared with the palpebral and bulbar conjunctivæ; the rapidity with which they form depends on the amount of irritation the conjunctiva receives, for if silver nitrate is applied at birth the lymphoid cells appear in 48 hours and all the endothelium of the vessels is found proliferating. If we look at lymphoid tissue elsewhere at birth, such as in the tonsil or the lymphatic glands, we find it full of mononuclear leucocytes and plasma cells. The cells are present for some weeks before birth and are evidently produced in these structures, probably from their endothelial lining.

Going further afield we find that any connective tissue which is chronically inflamed becomes filled with these mononuclear cells. It becomes a question, therefore, whether these cells are derived from the endothelium of the inflamed area, like those in the lymphatic gland, or whether they are brought to it by the blood stream. Now in the case of the polynuclear leucocytes we are practically certain that they are brought by the blood stream, for it is found that they are increased in the blood and decreased in the organs in which they are produced during septic inflammation. But in the case of the lymphocytes in chronic inflammatory processes there is no such increase of them in the blood, their number, as compared with the polynuclear leucocytes, being normally very small, so that they must either arise from a rapid division of the lymphocytes brought to the part by the blood stream or be a local production of the cells, probably from the endothelium at the site of inflammation. This latter view is held by A. Whitfield, with whom I strongly agree. He looks on any endothelial or perithelial cell as capable of the production of mononuclear cells; in fact, he holds that any connective tissue can become lymphoid tissue. This is only what is to be expected—viz., that a specialised cell, such as the endothelial cell, should revert to its simpler forms on rapid division.

Further, it is a well-known fact in surgery that after complete removal of glands new ones form and in cases of chronic inflammation new glands are found in unexpected places, such as in the muscles of the back, where we are taught by anatomists that there are no glands. The conjunctiva seems to bear out this theory of origin of the lymphoid tissue from the endothelium most fully. The subepithelial tissue of the fornix, being richest in endothelium, through irritation becomes filled with lymphocytes and plasma cells varying with the amount of irritation during the first few weeks of life; and if further irritated by atropine or any other form of chronic irritation it takes on the formation of typical lymphoid follicles, which are identical in structure and character with a minute form of lymphatic gland and behave both in health and in disease in a similar way to those structures; further, in Parinaud's disease we have the association of follicular formation with glandular enlargement. Nothing to my mind can be stronger evidence than this of the local production of the lymphocytes and plasma cells.

The importance of the early formation of the lymphoid tissue as a protection will be suggested in connexion with infection in ophthalmia neonatorum and the action of silver nitrate as a prophylactic in that disease. The lymphoid tissue appears first in the fornices and then spreads to the palpebral conjunctiva. It varies in extent with the amount of inflammation in the conjunctiva. Unless inflamed the bulbar conjunctiva contains no lymphoid tissue and even then the mononuclear leucocytes disappear after the subsidence of the inflammation, but even in this situation follicles occur in cases of very chronic inflammation, such as in trachoma of the limbus. Plasma cells are always found in the lymphoid tissue, both in the conjunctiva and elsewhere unless the tissue be diseased, as is the case in follicles infected with trachoma and tubercle, when the cells become rapidly broken up. They are less numerous in rapidly formed follicles and in new lymphoid tissue than in the older parts. They become increased in any tissue subjected to chronic irritation and a notable instance of this is the bulbar conjunctiva when irritated by the friction of the trachoma granules, but they disappear at the foci of a disease affecting the tissue, as will be seen later. We now pass on to the histology of the follicular formation.

FOLLICULAR FORMATION.

So-called follicular conjunctivitis is characterised by the formation of follicles, which appear chiefly in the lower fornix. Occasionally in severe cases they are found in the upper fornix and on the tarsal conjunctiva. Their position in the lower fornix is a point of importance in distinguishing clinically this disease from trachoma, in which the follicles are principally situated in the upper fornix. But the presence of follicles on the upper lid is not absolutely diagnostic of trachoma. True follicular formations, such as are so commonly seen amongst children, give rise to no symptoms and produce no change in the conjunctiva, disappearing spontaneously without leaving any trace behind. They can hardly, pathologically speaking, be called a disease since microscopically they are seen to be identical in structure with the follicles found in the ordinary lymphatic gland and show a marked difference in structure to that of a follicle infected with trachoma, except perhaps in the early stages, as will be described when treating of that disease. Follicular conjunctivitis occurs in children at a time when all the adenoid tissues of the body are peculiarly active[3]—that is to say, when adenoids (which resemble very closely, both microscopically and pathologically, follicular conjunctivitis) and enlarged tonsils are found and the lymphatic glands all over the body are apt to become enlarged on the slightest provocation. Apart from children, these follicles also make their appearance in general diseases of lymphoid tissue, as is sometimes seen in Hodgkin's disease. They also appear after the application of irritants to the conjunctiva, as in patients who suffer from atropine irritation. It is, therefore, seen that the follicle (1) may arise as the result of irritation; and (2) may be associated with general lymphatic enlargements. As a rule both factors probably play an important part in follicular conjunctivitis. As we have already observed, the lymphoid tissue of the conjunctiva is of new formation. The follicles in an ordinary lymphatic gland in which mononuclear cells evidently originate in no way differ from those of follicular conjunctivitis and I think therefore that these latter follicles may be looked upon as an effort on the part of the tissue towards the increased local production of mononuclear cells, either as the result of irritation or of general increase of the lymphoid tissue. Further, in Parinaud's disease we find follicular formation associated with glandular enlargement.

The epithelium covering the follicles, although thrown into folds, does not dip down into the tissue beneath, as in trachoma. It is usually undergoing extensive mucoid change and especially is this evident over the tops of the follicles. When this change is very excessive the epithelium is thinned and the follicles which lie directly beneath the epithelium no doubt occasionally rupture through it, and subsequently become infected with pyogenic micro-organisms

[3] Coppez, H.: Conjunctivite Folliculaire et Végétations Adenoides du Naso-pharynx. Archives d'Ophtalmologie, 1899. XIX. II.

that give rise to the discharge which is sometimes associated with this disease and which, by producing further irritation, causes increased follicular formation.

The subepithelial tissue.—The follicles lie directly beneath the epithelium. They have sharply defined borders and there is a band of lymphoid tissue directly beneath the epithelium connecting one follicle with another. This lymphoid tissue in the neighbourhood of the follicles often contains a large number of plasma cells. The deeper layers of the conjunctiva are unaltered, there being comparatively no increase in the cellular elements or proliferation of the connective tissue cells, even in the cells in close proximity to the follicles. Occasionally, lymphatics and in some instances small veins are found packed with mononuclear leucocytes and plasma cells.

The follicles.—The follicles may be single or, as occurs when they are older and larger, they may contain masses of darkly staining cells which are due to the presence of another younger follicle within, thus resembling a lymphatic gland. They consist of a definite outer wall of endothelial cells which are often found proliferating. This outer wall is absent where the follicle is connected with the band of lymphoid tissue beneath the epithelium. Within the outer capsule of endothelium is a very delicate stroma, best seen in the older follicles. In this stroma are found occasional blood-vessels, also vessels which resemble lymphatics, since they are never found to contain blood.

The cells of the stroma consist of two types. The first form of cell making up the stroma is a typical endothelial cell. Some of these cells undergo a change, attention to which was first drawn by Leber. In connexion with trachoma he described these cells as containing "half-moon shape" and "coccoid-like" bodies, which he at first thought were parasites. Now if these cell inclusions be carefully examined the "half-moon shaped bodies" are seen to be not really half-moon shaped at all but round; that is to say, the chromatin, which is that which takes up the stain, is chiefly situated on one side of a round body, giving a half-moon shaped appearance. Numbers of the larger "coccoid-like bodies" show a pale centre with a darkly staining outer rim of protoplasm. Now these endothelial cells often also contain within them fully formed lymphocytes. The "coccoid and half-moon shaped bodies" are evidently produced by the digestion of the lymphocytes by the endothelial cells, all stages in the process being observable; they are not only found within the endothelial cells but also within the giant cells. As the cell inclusion is digested the protoplasm of the endothelial cell becomes vacuolated around it and when completely digested nothing but a vacuole is left. During the process of digestion the inclusion becomes more darkly staining, due no doubt to the shrinking and matting together of the reticulum of the cell. In a like manner whole plasma cells can be found within these endothelial phagocytes, the protoplasm of the endothelial cells around them becoming vacuolated until only the nucleus remains as a coccoid or half-moon shaped body. This endothelial phagocytosis takes place to an enormous extent in "resolving" follicles after the subsidence of inflammation and no doubt accounts very largely for the disappearance of the mononuclear infiltration after all inflammatory exudations. That this process of digestion of cells takes place in the endothelial cells elsewhere in the body (peritoneal cavity) has been shown to me by Briscoe,[4] some drawings from whose films I have made; they were taken from the peritoneal cavity of a guinea-pig two days after the injection of its own blood and show the inclusion of polynuclear leucocytes (pseudo-eosinophiles) by the endothelial cells and the process of their digestion. A similar change can also be seen in the endothelial cells on Descemet's membrane in cases of keratitis punctata.

The second form of cells making up the stroma are more typical connective tissue cells, with the ordinary pale blue nucleus and red nucleolus and badly staining protoplasm, when stained by Pappenheim's method. This cell is extremely rare in the follicles of follicular conjunctivitis.

The third form of cell, clasmatocytes or wandering endothelial cells, are large cells; their nucleus stains pale blue, with one or two red nucleoli, the cytoplasm staining red with Pappenheim's method. These cells are intermediate in structure between the endothelial cells and the plasma cells and cells are always found of which it is impossible to say whether they are clasmatocyte or plasma cells.

[4] See also the Origin of the Complement in the Peritoneal Cavity, Orth's Festschrift, 1903.

The cells of the follicles.—The character of the cells varies somewhat with the age of the follicle. In young follicles they consist very largely of mononuclear leucocytes (mainly lymphocytes) with a few scattered plasma cells. All the cells take the stain well, none of them show any signs of degeneration, and many can be found undergoing mitosis. In the larger and older follicles the cells, although consisting largely of lymphocytes, contain increased numbers of clasmatocytes and well-formed plasma cells. In some of the older follicles, as has already been mentioned, there are found collections of darkly staining cells with lighter centres, which are strongly suggestive of the commencing formation of new follicles inside the old (endofollicles). These groups are found in their early stages at the periphery of the follicle; some of the endothelial cells of the lining in their neighbourhood are proliferating, which probably furnishes their origin.

LYMPHOMA OF THE CONJUNCTIVA.

The most common situation for lymphoma is the inner end of the lower fornix. I have made sections from one such case in a female, aged 25 years, who some weeks previously had a mild attack of Koch-Weeks conjunctivitis.

The epithelium over the surface had undergone some mucoid changes.

The subepithelial tissue.—The lymphoma consists of a mass of encapsuled lymphoid tissue. Directly beneath the epithelium, and therefore in the neighbourhood of the small vessels, there is a layer of plasma cells. The lymphoid tissue is arranged in an exactly similar manner to the lymphoid tissue of a lymphatic gland. The stroma and the lining membrane of the lymphoma consist of endothelium and blood-vessels, numbers of the small veins of which are packed with mononuclear leucocytes and plasma cells. Within this stroma there are large numbers of typical follicles, consisting of mononuclear leucocytes and plasma cells. The follicles, at least in their early stage, are always found originating either from the endothelial lining of the lymphoma or from the blood-vessels within. The follicles contain, in addition to the lymphocytes and plasma cells, endothelial phagocytic cells and giant cells.

Conclusions.—In lymphoma, which is the outcome of previous inflammation, therefore we have the connecting link between the so-called follicle of follicular conjunctivitis and an ordinary lymphatic gland, the lymphoma being in size, structure, and probably in function identical with an ordinary small lymphatic gland.

[The description of cells found in the examination of the discharge in a large number of cases of both acute and chronic forms of conjunctivitis was then given and the following conclusions were drawn:—]

CONCLUSIONS AS TO THE CELLS OF THE DISCHARGE.

It may be said that in all the acute forms of conjunctivitis the discharge is principally made up of polymorphonuclear neutrophiles (94 per cent.) with an occasional polymorphonuclear eosinophile, but in some diseases, such as pemphigus and vernal catarrh, the numbers of the latter cell may be largely increased. The large mononuclears and lymphocytes each make up about 3 per cent. of the cells of the discharge. In the chronic forms of conjunctivitis, especially when the disease affects more the subepithelial tissue, as in trachoma, plasma cells are found in large numbers; they are also occasionally found in very small numbers in the discharge from acute conjunctivitis towards the end of the attack. Mast cells are found in the discharge principally in diseases of the subepithelial tissue, such as trachoma and phlyctenulæ but they are also occasionally found in the more acute forms of conjunctivitis when of long standing. The cells undergo degeneration by (1) vacuolisation, which seems generally to be due to the digestion of organisms, &c.; (2) hypochromatosis, gradual fading of the cell due to the absorption of fluid; and (3) pyknosis, shrinking of the protoplasm of the cell due to the loss of fluid, the latter two forms of degeneration depending on the osmotic properties of the cell wall.

CONTAGIOUS CONJUNCTIVITIS DUE TO MICRO-ORGANISMS.

Gonorrhœal conjunctivitis.—Clinically the disease is usually divided into two forms: (1) that found in newly born infants; and (2) that attacking adults. Newly born children are especially prone to infection of the conjunctival sac with micro-organisms, as has been previously shown, for the following reasons: first, the absence of lacrymal secretion; secondly, the epithelium is not so thick and there

is no flattened layer as in the adult (numbers of the cells, especially in the fornix, have been lost owing to mucoid change, which in places leaves the basement membrane bare); thirdly, there is an absence of leucocytes from the lymphoid tissue; and fourthly, although the eyelids no doubt are closed as the child passes through the vagina they are in contact with the secretion for some hours before birth.

THE CHANGES IN THE TISSUE AS THE RESULT OF OPHTHALMIA NEONATORUM.

The following observations were made on three cases of ophthalmia neonatorum. They were all extremely severe cases; one had ended in complete destruction of both eyes and the other two of one eye each.

The epithelium on the surface is somewhat irregular in thickness and is desquamating, some of the superficial cells containing the gonococcus. The conjunctiva becomes papillated in consequence of the swelling beneath. This is best seen in sections cut parallel to the surface when papillæ containing numerous blood-vessels are seen completely surrounded by epithelium. The epithelial cells are much separated from each other, chiefly no doubt by the passage through them of enormous numbers of polynuclear leucocytes, since the conjunctival sac will often become filled with pus in less than five minutes after cleansing. Many of the cells show evidence of mitosis. Between the epithelial cells are found numbers of mononuclear and polynuclear leucocytes, and although in the section the greater number seen are mononuclear cells the polynuclear cells are found in greater numbers in the discharge, doubtless due to the greater power of amœboid movements on the part of the latter cells.

The subepithelial tissue.—There is an extensive exudation into the superficial layer of connective tissue; the vessels in the deeper layer of connective tissue are dilated, and in and around the papillæ there are quantities of small vessels of new formation with proliferating endothelium. These vessels contain large numbers of polynuclear leucocytes and show many beautiful examples of diapedesis. The connective tissue cells of the superficial layer are proliferating but not to any marked extent. The cells in the deeper layer of connective tissue show practically no changes.

The cells of the exudation (polynuclear leucocytes.)—Although these cells are found in large numbers in the subepithelial tissue they are not nearly so numerous as the mononuclear cells; their relative proportion becomes increased in the epithelium and in the discharge they make up about 94 per cent. of the cells. Hence it is seen that although they make up the greater proportion of the cells in the discharge they are not seen in such enormous numbers in the subepithelial tissue when compared to the mononuclear cells—a fact which can easily be accounted for by their more active amœboid movements. Probably, except in special circumstances, these cells never re-enter the circulation.

Mononuclear cells.—Mononuclear leucocytes, both large and small, are found in great numbers scattered throughout the exudation and are seen best in the papillæ, which contain little else but these cells, many of which are degenerating, together with a few endothelial cells and new blood-vessels.

Plasma cells.—Of great interest is the distribution of the plasma cell in this disease. They are found in great numbers in the connective tissue beneath the papillæ, but where they approach the epithelium they become rapidly broken up, the cell staining more faintly and losing its protoplasm; hence they are practically absent from the papillæ, no doubt due to the presence of the toxin produced by the gonococcus growing in the epithelium. The fact that the plasma cells become broken up is of great importance in showing the action of some powerful toxin on the cells and as will be seen in dealing with trachoma this fact is of great use in demonstrating the existence of a disease of which the cause has not been discovered. I have been unable to obtain a specimen showing the early stages of this disease.

KOCH-WEEKS CONJUNCTIVITIS.

Bacteriology.—The bacillus of this disease is one of the most common causes of purulent ophthalmia, being found all over the world. The disease occurs frequently both in adults and in children, in sporadic and epidemic forms, often running through a whole school, as it is extremely infectious. Morax found 125 cases out of 1430 general ophthalmic out-patients. Weeks, Kartulis, and Hoffmann have also pointed out that it occurs in epidemic form. It almost invariably affects both eyes and is characterised clinically by intense injection of both palpebral and ocular conjunctivæ. The injection in the ocular conjunctiva is very marked and there are numerous hæmorrhages all over the surface. At the same time it is entirely free from chemosis. I have examined 30 children with this typical clinical condition and have found the bacillus in 25 cases, generally unassociated with any other bacteria. In five out of the 25 cases above mentioned it was associated on the culture media with the staphylococcus albus, pseudo-diphtheric bacilli, and diplobacilli. From these observations, together with the examination of a large number of cases by smear preparation, I think it is possible to say almost with certainty from the clinical condition whether a case is due to this organism or not. Towards the end of the attack follicles form in the fornix which persist for some time after the disease has subsided. Hoffmann and Markus have also pointed out the frequency of phlyctenulæ associated with this disease.

Histology of Koch-Weeks conjunctivitis.—I have had the opportunity of examining the conjunctiva removed from the lower fornix at its junction with the ocular conjunctiva in two cases. The first was from a severe case of the disease on the second day in a girl, aged 20 years, whilst the second was from a mild case on the eighth day of the disease in a man, aged 30 years. I have also examined a number of specimens from the lower fornix showing follicular formations; these follicles usually begin to appear about the sixth day of the disease, forming rather earlier in children, and persist for some time after the disease subsides.

The epithelium.—The epithelium shows extensive mucoid change which is not distributed evenly throughout but occurs in patches over the area of exudation into the subepithelial tissue and is more marked in the case of long standing than in the early case; the epithelium is occasionally found dipping down into the subepithelial tissue.

The subepithelial tissue.—The exudation, unlike gonorrhœal conjunctivitis, is unevenly distributed throughout the subepithelial tissue, which contains between the patches of exudation very few more cellular elements than the normal number. In the areas of exudation in the subepithelial tissue the vessels are dilated and the endothelium proliferating and there are quantities of newly formed vessels which are well marked in these areas in the sections from the case of two days' duration; there are also numerous small hæmorrhages into the subepithelial tissue. The character of the cellular exudation varies in the two cases. In the early case the exudation consists largely of polynuclear leucocytes but there are also numbers of mononuclear cells which are principally lymphocytes, together with a few plasma cells; these cells are found around the blood-vessels of both the superficial and deeper layers, the polynuclear leucocytes (spider cells) being more numerous around the small newly formed vessels, whilst the mononuclear leucocytes are found around the larger vessels; there are very few plasma cells present. In the older case there are more newly formed blood-vessels, the mononuclear exudation is more marked, and there are fewer polynuclear leucocytes than in the early case. Plasma cells are present in large quantities where the mononuclear exudation is situated, that is to say, around the vessels; they are broken up wherever there are large numbers of polynuclear leucocytes: that is to say, at the site of most active inflammation. The follicular formations do not differ in structure from those described under follicular conjunctivitis. In the early stages of their formation they do not contain many plasma cells. These cells gradually increase in number as the attack subsides. As the follicles begin to disappear the endothelial phagocytic cells make their appearance in enormous numbers and I have been able to count as many as 12 under a single field of the $\frac{1}{12}$th.

From the above observations it is seen that in the early stages the plasma cell is not present to any extent but that as the disease subsides and the tissues become locally immune it appears in increasing numbers. Evidently the affection of the subepithelial tissue is much more localised than in gonorrhœal conjunctivitis, as evidenced by the unequal distribution of the exudation, but at the same time it is very acute, as shown by the multiple hæmorrhages and polynuclear exudation. This localised infection no doubt accounts for the frequency of phlyctenules and the localised hæmorrhages seen in the bulbar conjunctiva in this disease and also no doubt for the frequency of follicular formation after the acute stages have subsided.

DIPLOBACILLARY CONJUNCTIVITIS.

W. Stock has examined a whole conjunctival sac from a patient who died while suffering from a chronic diplobacillary conjunctivitis. I have examined pieces of tissue removed from the lower conjunctival sac in three typical cases of two, three, and four weeks' duration. Although my observations are in the main similar to his he does not demonstrate the character of the cells by means of plasma stain.

The epithelium.—The greatest changes take place in the epithelium which undergoes very extensive desquamation and mucoid change. In the later stages of the disease it dips down into the subepithelial tissue and new glands are formed; these new glands are very liable to become occluded, with the result that retention cysts are produced.

The subepithelial tissue.—There is no increase in the polynuclear or mononuclear leucocytes in the subepithelial tissue, except in the regions where the epithelium dips down into it or where there are cystic formations. Elsewhere the change consists in a large increase in the number of plasma cells, of which the exudation consists almost entirely; directly beneath the epithelium the cells are somewhat broken up, no doubt due to the presence of the toxin. There is also a considerable increase in the mast cells of the underlying tissue. In one case which was of long standing there was a considerable amount of hyaline degeneration present. The diplobacillus is a non-pyogenic organism and causes a conjunctivitis which is extremely chronic if untreated but very amenable to treatment in the early stages. It produces the greatest changes in the epithelium in which it grows. The reaction caused by the toxin in the subepithelial tissue is not an exudation of polynuclear or mononuclear leucocytes, as is seen in the more acute forms, such as Koch-Weeks and gonorrhœal conjunctivitis, but is the production of plasma cells. These cells, as they come near the epithelium, are broken up through the presence of the bacilli and, therefore, owing probably to the low vitality of these cells, the disease is not eradicated spontaneously.

The Lettsomian Lectures

ON

TOXIC MENTAL DISORDERS.

Delivered before the Medical Society of London on Feb. 6th and 20th and March 6th, 1905,

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LECTURE II.[1]

Delivered on Feb. 20th, 1905.

MR. PRESIDENT AND GENTLEMEN,—In the last lecture I commenced with a definition but it would be difficult to give any definition of toxic insanity and it is difficult concisely and with proper interest to place the subject fairly before you.

Mental and nervous disorders which depend chiefly upon toxic agents may depend directly upon them but also may not infrequently depend upon secondary toxins—that is to say, toxins which have been produced by the primary infections. A large number of nervous and mental disorders depend upon toxic agents and some of the toxic agents seem to have special or specific effects upon certain parts of the nervous system, leaving others comparatively untouched. In some instances the differences between one toxic cause and another is rather a question of degree than of the nature and though they may resemble one another in many aspects yet there is no doubt that some of these poisons are much more persistent or malignant, or both, than others. In comparing the effects produced by alcohol with those produced by lead we find that they are very similar in character, and in some cases hardly to be distinguished one from the other, but yet the effect of alcohol is as a rule transient, the effect of lead being more persistent and more serious. In the same way, if the effect of alcoholic poisoning be compared with that of syphilitic poisoning one has to recognise the great differences between the transient results of alcohol and the more invading and persistent infection of syphilis. The mental symptoms depending upon poisoning depend to a very great extent upon the quantity as well as upon the character of the toxic agent. There are certain poisons which if taken in large quantity will produce stupor, whereas if taken in only small quantities they have a stimulating effect. In the epidemics, such as scarlet fever, influenza, and the like, we constantly find at the early part of the epidemic a potent poison, whereas later it is less potent and has less serious effects upon the individual.

The frequency with which the poison is taken is of importance. A man who is having continuously repeated doses of poison suffers mentally and nervously much more seriously as a rule than the man who has one or more large doses of poison but not constantly repeated. There are specific peculiarities in poisons and there are specific differences in the persons poisoned. It seems probable that the neurotic individual is likely to suffer along the nervous side from infection much more than is the person who is not neurotic. It is believed by many that the infection of syphilis is much more serious when it attacks a person of neurotic but not insane inheritance—that the danger signal will be shown along the neurotic line whenever the affection occurs. There is a special idiosyncrasy as well; there are some people who are intolerant of the smallest amount of cocaine, and the smallest doses by instillation of atropine or of duboisin have produced most marked and serious mental disorders, temporary I admit but yet showing the extreme susceptibility of some people. Then, again, a person may become unstable and intolerant of any poison as a result of traumatism, such as sunstroke or any severe injury to the head or any strain.

First we will consider the toxic agents from without the body—that is to say those introduced into the body, such as alcohol, morphine, and the like. Then we will take toxic agents which form within the body as a result of some other infection, taking it for granted that it is not an influenzal infection or the syphilitic virus directly that produces the mental disorder, but that they set up a process which produces the toxin which gives rise to these troubles. Then we will consider the generation in the body of poisons the result of disordered metabolism; such conditions are to be met with in Bright's disease, in myxœdema, in diabetes, also probably in similar disorders depending upon a disturbance of healthy metabolism resulting from shock, fright, and alarm. Also acute delirious mania, the so-called acute delirium, or, according to some of the more recent continental writers, acute bacillary delirium. Then we have a very important class of cases of auto-intoxication from the gastro-intestinal tract. Then there is a fifth class which I am hardly prepared to accept as being different from the second, due to micro-organisms from without getting directly into the blood stream and thus producing acute infection. It is necessary to mention this in order to make the subject complete, but I shall not consider it. As to the general likeness which occurs under these conditions there is no question but that the following are the chief common characteristics. First of all the disorder is most commonly and in the earlier stages generalised and not localised. Next there comes a general confusion of function rather than anything else. Later we get sensory and motor troubles. Taking alcohol again we get staggering from the motor side and doubt and uncertainty and defective control on the mental. With the further development of the symptoms we get loss of higher control in the individual, loss of self-respect, he suffers in social relations after the attack, and he seems unable to fit in with his surroundings. Later come the craving and the desire for the cause and the falling before temptation. This does not exist in relationship to all the toxic agents and is much more marked with some than with others. Then another very important thing is to note the effect of most poisons sooner or later upon the storage mental capacity, so that defective memory is a marked and conspicuous sign. The end is generally dementia. In some cases there is comparatively small evidence that this result is impending. For instance, with certain poisons—belladonna, hashish, alcohol, and the rest—one gets an apparent brilliancy, which

[1] Lecture I. was published in THE LANCET of Feb. 18th, 1905, p. 409.

has been compared to cerebral usury leading to cerebral bankruptcy.

The effects of the poisons may be either direct or indirect; they may at once seem to affect the nervous system, probably through the blood current, or they may seem to go directly through the circulatory and nutritional centres to the nerve centres. A certain number have not only direct but indirect effects; a poison which has affected the liver or one which has affected the kidneys chiefly reacts by producing further derangement or disorder of nutrition of the highest centres. It is important to remember that some poisons tend to produce moral defect, whereas others tend to sensory defect, others to muscular defect, and some to intellectual rather than to moral defect. There are, then, specific dangers due to the selective agency or power of a poison. In lead there is this selective tendency and syphilis has special dangers in this respect. Then one has to remember the persistency of certain poisons; it is a question whether a man who has once acquired syphilis is ever free from it. There is also the cumulative effect of such mineral drugs as arsenic to be remembered. I would therefore say that the specific dangers of toxic agents may depend upon their selective action, upon their persistency, or upon their cumulative power.

As to poisons from without, the first which I must refer to is alcohol. A large dose of alcohol may at once produce poisonous symptoms and stupor. Any agent which will produce any temporary nervous or mental disorder may produce a similar disorder in an aggravated form, so a very large dose of alcohol may render a man a fool, but it may render him permanently, or for days or weeks, a stuporous dement, or it may produce delirium. With regard to delirium tremens, a drunkard may have an attack of delirium tremens and recover, and so on, till at last there comes a time when the alienist is called in. It is difficult to know what to do with these cases. Probably they have been freely purged and all sorts of things have been tried to give them rest and sleep; they may have got into a condition in which they sleep fairly well and take food fairly well, and yet in their waking moments they are chronically mad. Some of these cases can only be treated by a hair of the dog that bit them. One hesitates to give alcoholics alcohol but sometimes it is necessary. Delirium following any form of mental disorder which can be produced temporarily can become permanent, a slight delirium may become a persistent delirium. Head injury, sunstroke, and the like predispose to attacks of insanity after excessive consumption of alcohol. Some of the most troublesome and dangerous symptoms seen as the result of chronic alcoholism are epileptic seizures. True epilepsy seems to be developed after middle age in some chronic alcoholics. Alcoholic insanity, so-called, which embraces alcoholic mania, alcoholic melancholia, and dementia, is characterised by delusions, hallucinations, and suspicions. The patients frequently become homicidal and not infrequently are in a maudlin, weak-minded state and become suicidal.

Perhaps I should say a few words about dipsomania. Is there such a disease as dipsomania pure and simple? Or is it simply a variant of recurrent mania in which there is a tendency to drink at the periods of depression? Nearly all the dipsomaniacs I have come across have belonged to neurotic families and have been liable to other attacks of nervous disorder. It seems to me interesting that dipsomaniacs do not tend to dementia so certainly or so rapidly as the ordinary drunkard. They seem to be able to recover completely from their disorders for a time. The most characteristic symptom of chronic alcoholic insanity is loss of memory for recent events, as in the mental disorders and the weak-mindedness which occur with senility, with decay, and, in fact, alcoholism may almost be called alcoholic senility. There is defect of memory for all recent events to a most extraordinary degree. And in passing I would say that one of the characteristics of this is that very frequently with the loss of memory there is loss of craving, loss of desire. Another almost characteristic defect of memory occurring with senility and also occurring in alcoholism is loss of the sense of time and place There is the individual who sits by his fireside and tells you that he has been to the office that morning, that he is sorry he has not changed his clothes but he was getting into his dressing gown preparatory to dressing for dinner. As a matter of fact, he has not been out of the house for weeks. Or there is the individual who tells you that he is going home presently, he being in his own house where he has lived for years. This loss of appreciation of time and place relationship with the loss of recent memory is extremely interesting.

I will roughly sum up this part with these few remarks: that the nervous symptoms proceed apparently from the periphery to the centre; that sensation, motion, and intellect are in order affected. These lead to various mental disorders, to sensory disorders, giving rise to illusions or hallucinations such as of electricity, galvanism, or poisoning. Sensory defects, such as that of sight or hearing, lead to similar disorders of mind, confusion of ideas, with ideas of undue influence. Motor disorders probably play a part in the confusion as to time and place and also they cause ordinary giddiness. The chief marked intellectual defect is gradual and steady loss of mental power in all directions, loss of memory for recent events being the most characteristic. There is what I may call the sensory motor disorder seen in the epileptic; troubles so common in the advanced cases of this may be followed by a paresis resembling general paralysis or some form of local palsy. The progressive decay of the mind, due to alcohol, is marked by the progressive loss of moral sense, deadening of the feelings and of the higher civilisation, and later again in the onset of the affection a tendency to impulsive and dangerous acts. The form in which the alcohol is taken also has undoubtedly some effect. It used to be thought that there was little danger in beer, that there was some danger in wine, that there was still greater danger with spirit, and that liquors such as absinthe were specially pernicious—in fact, there was developed the term absinthism to indicate nervous disorders in which epileptiform seizures were particularly common.

Now to pass on to the next most important poison from without—namely, opium or morphine. The origin of the morphine habit (which occurs so commonly, unfortunately, in members of our profession and those connected with drugs) is often pain, more commonly sleeplessness, and extraordinarily commonly pure inquisitiveness. It is an interesting fact that I have rarely seen a serious acute attack of mental disorder follow the beginning of the taking of opium or morphine, even though a fairly large dose has been taken. I have seen a single large dose in habitual morphine-takers produce stupor, which has persisted, very similar to the stupor met with in alcoholics. As a rule, morphinomaniacs become such in a slow gradual way. There are slow progressive deterioration and loss of self-control, not so much loss of memory but an utter confusion of ideas, and there are disturbed ideas of time and place relationship. When mental trouble arises it not infrequently leads to profound melancholia, sometimes through the stage of acute mania when the morphine is withdrawn. Then the symptoms become acute and it is common for there to be at this time suicidal attempts. The moral decadence seems to be in relationship with the strength of the poison: a drunkard is a liar but a morphinomaniac is an accomplished liar. In some cases there is moral dementia out of all relationship to any intellectual defect. If with morphine there are ideas of poisoning and of persecution these are almost always associated with visual hallucinations, sometimes of the sensuous and sometimes of the sensual type. Not infrequently the individual who is poisoning himself accuses others of poisoning him.

Next to morphine I would refer to cocaine because it is not at all an uncommon thing to find that an individual who has been a morphine-taker, having made good resolutions and failed, determines to strengthen his good resolutions by taking cocaine. One advantage, from the medico-legal point of view of the cocaine-taker, is that he develops hallucinations of his senses which are readily detected and which call attention to his vice. The cocaine-taker hears voices much more commonly than the morphine-taker. The morphine-taker more frequently sees things, the cocaine-taker hears whispers and voices. Next to the auditory hallucinations are those of the skin. Persons who have been in the habit of taking cocaine will complain that there are worms under their skin, or will complain that by some means or other people are using the x rays or radium upon them. And such people, although there is nothing to be seen on the skin, will pinch it up and desire you to see that there is something there. I have not come across any cases of dementia which owed their origin directly to the use of cocaine. I have seen extraordinary susceptibility and in two cases I have seen temporary delirium and temporary stupor following the use of cocaine in the extraction of teeth. I have

seen the same thing follow on more than one occasion the instillation of atropine into the eye. Many years ago I heard somewhere that duboisin had been used as an exhilarant and I used it for dilatation of the pupils and one patient had, after the dilatation of the pupils, marked excitement, this patient having been melancholic before. I tried it in several other cases; in only one other did I meet with the excitement. Belladonna may produce delirium and there again, passing from the delirium, we may find delirious mania set up. In England we see nothing of hashish poisoning but it is only right to mention it in passing. When I was in Cairo some years ago I spent several days in the asylum there and saw a great many cases of delirious excitement depending upon hashish poisoning. The taking of paraldehyde even, loathsome as its taste is, may grow into a habit and may give rise to symptoms like those due to alcohol. I have seen one or two cases in which the taking of paraldehyde led to hallucinations of all the senses with ideas of persecution and poisoning.

Passing from the simpler poisons such as alcohol and vegetable poisons, I would refer briefly to mineral poisons such as lead. Almost any form of nerve disorder can result from lead poisoning. I have seen acute mania follow it. As a rule the symptoms are those affecting muscle rather than mind; they are cumulative in their effect. And what is most important is that lead alone or lead with alcohol will give rise to nearly all, if not all, the symptoms which are commonly met with in general paralysis of the insane. It seems pretty certain that lead will produce true general paralysis of the insane. I have seen cases of mental disorder following poisoning by coal gas. Following the use of any of the anæsthetics mental disorder may occur and I have met with several cases in which surgical dressings such as iodoform have produced temporary insanity.

Now comes, perhaps, the most important of all, next to alcohol, and that is the neurosis of influenza. Influenza, like other fevers, may set up any psychopathy, or any psychopathic changes may result from, or follow, influenza. Insanity may come on at various stages of the disease. One has seen influenza in an early febrile attack, with the temperature at 103° or 104° F., start acute delirious mania of a fatal type. One has seen the febrile stage of the disease give rise to maniacal disorders of various forms which may then start any form of insanity. The rôle of influenza varies in the production of the insanity. In some cases, undoubtedly, it is merely an exciting cause. People who have been subject to other attacks of insanity, sufferers from recurring mania or melancholia, get an attack of influenza and that again precipitates the attack. Therefore it may be the predisposing or the exciting cause of any form of mental disorder. But in nearly all cases where there is mental disorder following influenza it occurs in persons of neurotic inheritance or in those of a degenerate type. The alcoholic, for instance, may have been chronically alcoholic and not have suffered much from it perhaps, yet when he gets an attack of influenza he may become either a melancholiac or the victim of delusional insanity. The insanity follows, then, from an altered brain nutrition, possibly and most probably toxic, directly or indirectly. The onset of the insanity is often sudden and bears no relationship to the severity of the attack of influenza. Some of the most marked cases of insanity following influenza which I have come across have been those in which the influenza itself had been comparatively slight. The curability of the cases following influenza depends rather upon the form of the mental disorder than upon the severity of the influenza. Of course if the affection starts general paralysis of the insane or the evidences of general paralysis of the insane, it is no more curable because it was started by influenza than if it had been started by a blow or a shock. The insane are said to be less disposed to take influenza but I doubt it. It has occasionally had an interesting effect in curing psychoses. It is interesting also to remember that a person who is suffering from chronic insanity may, during an attack of influenza, have lucid intervals. There is no special indication so far as treatment is concerned.

The consideration of influenza leads to the consideration of neuroses following fever generally—that is to say, post-febrile disorders. One has seen disorder of mind following every one of the fevers. For instance, in typhoid fever there seems to be a post-febrile condition in which loss of memory is much more common than in any other disorder. In many of the others the mental disorder depends very greatly upon the fever and upon the delirious condition

It would be wrong for me to leave out gastro-intestinal auto-intoxications and I should like to speak of the acute delirious mania. Perhaps it is enough to say that one of the commonest symptoms which patients complain of when they come to me is constipation and indigestion—that is to say, various forms of gastro-intestinal trouble. Now and then the mental disorder has a direct relationship to the state of the stomach or of the bowels. And one has seen cases in which free purgation has brought about relief of the mental symptoms.

I have not time to speak of toxic conditions following upon surgical operations. I can only mention acute delirious mania or what has been called acute bacillary insanity. Under this head have been described cerebritis, acute meningitis, and by distinguished American physicians it has been termed delirium gravé. Acute delirious mania is a very good term unless bacillary infection can be proved. A shock of any kind will start a delirious condition, anything which alters rapidly and acutely the nutrition of the brain. I believe starting from the brain itself there may be auto-intoxication, a toxin which will produce delirium, and which develops into probably one of the most dangerous and fatal diseases which exist.

And now the time has arrived for me to sum up, and I feel that the whole subject must be left rather for your careful consideration; one has had to bring too many subjects under review. I do not wish to trace the origin of all mental disorders to micro-organisms, but I feel that we must accept the fact that associated with very many diseases there are bacillary growths, and yet that these micro-organisms are not the true causes. I would say that the part taken by such organisms varies greatly. I think the high tide of belief in bacillary causation has been reached and that we must next look for some cause of a physiological and chemical nature. But whatever we do we must be careful not to accept too readily the last idea, which is often very like the man seen against the sky who looks very big because of his position, and from that alone

ON THE DIAGNOSIS AND TREATMENT OF HYPERTROPHY OF THE PYLORUS IN INFANTS.[1]

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THE importance of early diagnosis and of a clear understanding of the lines of treatment in the so-called "congenital hypertrophy" or "hypertrophic stenosis" of the pylorus in infants has become increasingly evident within the past few years, for it has been shown that what was formerly regarded as an incurable and inevitably fatal condition is, sometimes at least, amenable to treatment. Judging from my own experience I should say that many, perhaps even a majority, of these cases recover completely if only they are recognised sufficiently early and subjected to suitable treatment. I propose to deal chiefly with these two points, diagnosis and treatment, and my remarks will be based upon 20 cases which have been under my own personal observation either in hospital practice or in private consultation. Several other cases have been in the wards of this hospital and some of these also I have had the opportunity of watching, thanks to the kindness of my colleagues.

So much has been written recently about congenital hypertrophy of the pylorus that it is unnecessary to weary you with any detailed description of the disease; but let me remind you of its salient features. An infant under the age of four months has been vomiting his food. The vomiting began at the age of three or four weeks and for the first week or so was thought to be no more than a little indigestion might account for. But it persisted and soon began to attract notice, more by its persistency than by its frequency, for it occurred perhaps only two or three times in the 24 hours. Then the food was thought to be at fault and change after change was made in the feeding, each time,

[1] This paper is founded on a lecture delivered at the Hospital for Sick Children, Great Ormond-street, on Feb. 9th, 1905.

perhaps, with temporary diminution of the vomiting. But still the vomiting persisted and at times was noticed to be so sudden, copious, and forcible that the vomit was shot out a foot or more from the mouth and perhaps through the nostrils as well. Since the vomiting began the bowels have been costive, perhaps only opened with enemata. And now the infant is wasting to a marked degree and perhaps it is this wasting rather than any alarm at the vomiting which leads the parent to seek medical advice. Such is the history which leads one to examine specially for the two characteristic signs—visible and very marked peristalsis of the stomach and a palpable thickening of the pylorus—upon which the diagnosis rests.

DIAGNOSIS.

Having said thus much by way of general description I shall proceed to consider in detail the various points which bear upon diagnosis. But first let me emphasise the fact that no symptoms or combination of symptoms, however suggestive they may be, are sufficient for the diagnosis of congenital hypertrophy of the pylorus in the absence of the two characteristic signs which I have already mentioned. No doubt such a history as I have outlined would be strong ground for suspecting the existence of this disease and the suspicion might or might not prove correct, but where treatment, especially operative treatment, is so vitally serious a matter we have no right to be satisfied with anything short of certainty, and this depends upon the presence of well-marked visible peristalsis of the stomach, associated with palpable thickening of the pylorus.

Sex.—I would not have you imagine that any great stress is to be laid on sex in the diagnosis of this disease, but none the less I think that the predominance of males is noteworthy. Of my own 20 cases 17 were in males; only three were in females.

Age.—Far more important is the age incidence. On this point some misapprehension has arisen out of the nomenclature of the disease. More than once when I have seen these cases in consultation and have spoken of the condition as "congenital hypertrophy of the pylorus" I have been met with the objection, "But this is impossible, for the baby was perfectly well until it was four or five weeks old. How can the condition, therefore, be congenital?" Let me say at once that whatever may be the correct view as to the pathogeny of the disease, whether it be a congenital hyperplasia of the muscular tissue of the pylorus or a congenital lack of coördination with resulting spasm and thence hypertrophy, as Dr. John Thomson has suggested, or whether the hypertrophy be entirely of post-natal development, the symptoms are very rarely congenital. Of my own 20 cases only one began as early as the third or fourth day and only three others within the first week. The term "congenital," therefore, is misleading and although I retain it as, perhaps, representing a correct theory there is no proof that all cases are congenital in origin. That the obstruction is primarily due to spasm of the pylorus I regard as certain and to me it seems most probable that the hypertrophy also is the result of spasm; how long this hypertrophy may take to develop we cannot tell; but so far as the spasm is concerned I see no reason why it may not, like the disturbance of coördination which is evident in the hiccough which babies so easily get, or in the stuttering which is almost physiological in the young child who is learning to talk, be due in some cases to irregularity of function beginning after birth; may not the nervous mechanism of the stomach be as easily disturbed as the nervous mechanism of speech, particularly in the early days before function has become stereotyped by usage? Perhaps, indeed, the analogy may be closer than this and the tonic spasms of the muscles of speech find a counterpart in a stuttering stomach. But however this may be, the point I would emphasise is this, that the symptoms very rarely date from birth; of my own cases, 12 certainly, and one other probably, dated symptoms (vomiting) from before the end of the fourth week; in the remaining cases vomiting began between the fourth and the end of the seventh week. It is not always possible to be certain of the date of onset, for slight regurgitation which the parents have regarded as normal and which may, of course, be so in early infancy, has sometimes been present before the definitely abnormal vomiting began. I have never seen a case in which vomiting began later than the seventh week, but onset at least as late as the ninth week has been recorded.

Obviously these facts have an important bearing on diagnosis. For example, in the case of an infant, aged nine months, who had been vomiting persistently for three weeks, a diagnosis of congenital hypertrophy of the pylorus was suggested but in such a case the age alone, apart from various other indications, was almost, if not quite, sufficient to exclude this condition. I am aware that the name "congenital hypertrophy of the pylorus" has been applied to a condition supposed by some to be identical herewith in the adult and if the disease is primarily spasmodic it is conceivable that it might begin at any period of life, but so far as children are concerned the onset of the disease is almost, if not quite, invariably before the age of three months and unless vigorous measures are adopted death usually results before the end of the fourth month.

Vomiting.—Let me insist first with regard to vomiting that, however persistent and chronic it may be, it is never *per se* proof that an infant has congenital hypertrophy of the pylorus. Cases have been recorded as instances of this disease with no other evidence than persistent vomiting; let me warn you against such an entirely unwarrantable assumption. No doubt it is the symptom which in most of the cases has first suggested the presence of this condition but it is only when it is associated with the characteristic signs, the visible peristalsis of the stomach and the palpable thickening of the pylorus, that it becomes diagnostic.

Apart from its persistency the vomiting of congenital hypertrophy of the pylorus has certain features which are suggestive of the disease. 1. Its forcible character. A mother informed me recently that her child with this condition "pumped up" his food suddenly with such force that it shot out more than two feet from the mouth. Her account may have been exaggerated but it may serve to illustrate my point. She also mentioned another frequent result of this forcible expulsion, that the vomit comes through the nostrils also. 2. Its occurrence in an infant who has been carefully fed, particularly when, as happened in 10 out of my 20 cases, the infant was being fed by the breast only. 3. Its persistence in spite of such alterations of feeding and such general treatment as will usually control the vomiting of dyspeptic conditions. 4. Its large amount showing that the vomit represents more than one feed, perhaps the accumulation of several feeds, in the dilated stomach. When vomiting in an infant under four months has these features there is very strong ground for suspecting the presence of congenital hypertrophy of the pylorus, but each of the four, including the forcing of vomit through the nose, has occurred within my own experience, also in cases in which there was no reason to suppose the presence of pyloric obstruction.

I have referred incidentally to the fact that the vomiting is sometimes distinctly influenced by diet. In most cases the improvement is only short-lived, perhaps for a day or two, but I have known this to cause error in diagnosis; the temporary improvement with each change of diet was taken to indicate that the vomiting must be dependent simply on some fault in the feeding. The observation was correct, the inference was wrong.

Naturally much stress has been laid upon vomiting as a prominent symptom of the disease, but it must be remembered that the vomiting is not necessarily frequent; it may be only once or twice in the 24 hours. There may even be an interval of 24 hours in which there is no vomiting. No doubt this depends to some extent upon the degree of dilatation of the stomach which has occurred but I suspect that it means more and points to variation in the degree of obstruction, a variation which seems most naturally explained by varying degrees of spasm of the pylorus at different times.

As the result, no doubt, of the infrequency of vomiting in some cases this symptom has sometimes attracted much less attention than the wasting which accompanies it, and in two of my cases at least the vomiting was thought scarcely worth mentioning, the condition being regarded as simply obstinate infantile marasmus. In one of these both the medical attendant and the nurse stated that the vomiting was "nothing particular," but on cross-questioning one found that the vomiting, although it occurred sometimes only once in the day, was often more in amount than one or even two feeds and that it was shot out with unusual force through the mouth and nose.

Constipation.—The association of chronic constipation with this persistent vomiting is of some importance in diagnosis, for where chronic vomiting in an infant at this age is dependent upon faulty diet it much more often keeps company with loose, or at least unhealthy, slimy stools and

frequent action of the bowels. But there are exceptions in both ways. I have seen congenital hypertrophy of the pylorus with loose and frequent stools and I have notes of chronic vomiting with constipation in infants who showed no evidence of congenital hypertrophy of the pylorus. Nevertheless, I think it is a useful rule to examine carefully for congenital hypertrophy of the pylorus in all cases where chronic constipation is associated with persistent vomiting in an infant under the age of four months.

Wasting.—This, as already mentioned, may be the symptom which has attracted most attention and I only mention it again to warn you of the possibility of mistaking the case for one of marasmus from faulty feeding. I suppose there can be no doubt that until recently these cases of pyloric obstruction have mostly passed for the common marasmus of infancy or have been attributed to unsuitable feeding, and the mistake is easy enough to make, for the history may differ but little, if at all, from that of many a commonplace case of infantile wasting.

The two characteristic signs.—My own experience leads me to think that the condition is overlooked largely because the method of examination for the two characteristic signs is not generally understood. In three or four of my cases the presence of this disease had been suspected, but as the characteristic signs were supposed to be absent no diagnosis had been made, whereas when the case was examined under the requisite conditions the signs were shown to be extremely marked. In the first place it must be recognised that these two signs are only present at intervals, so that cursory inspection and palpation of the abdomen may, and almost always do, result in overlooking the condition altogether. Patient examination, occupying perhaps ten or 15 minutes, may be necessary before the signs can be elicited and occasionally, though, I think, rarely if proper precautions are taken, examination on a second occasion may be required. The reason of this is simple: both signs depend upon active contraction of the muscular wall of the stomach, and just as happens with the uterus during labour, at one time it is easily stimulated to activity and at another it remains inactive in spite of all efforts to excite contraction. The second point to be considered is the time at which the examination is to be made. I have almost always found that the abdomen has been examined without any reference to the time at which the infant was last fed and the result has been failure to detect the characteristic signs. The abdomen should be examined immediately after the infant has been fed. It is at this time, and apparently in some cases hardly at all except at this time, that the abnormal peristalsis of the stomach is to be seen, and it is during peristalsis that the thickened pylorus is to be felt. I think it is well also to watch the abdomen during the taking of the feed; sometimes after part of the feed has been taken vigorous peristalsis of the stomach commences. I would add as a third counsel, and one particularly applicable to these cases, that warm hands are no unimportant factor in the palpation of an infant's abdomen.

Visible peristalsis of the stomach.—Sometimes spontaneously, sometimes only after repeated stroking or gentle kneading of the epigastrium, a rounded lump, varying in size from half a large walnut to half a Tangerine orange, rises at the left costal margin and passes very slowly across the epigastrium slightly downwards towards the right hypochondrium. Before this lump has yet reached the mid-line a second similar lump is already rising at the left costal margin and sometimes before these two have yet disappeared in the right hypochondrium a third is already appearing on the left side, so that at one time three bulging eminences are seen like a chain of hills extending across the epigastrium. They move so slowly that at times they may even be seen to pause altogether but each in turn fades away in the right hypochondrium and a succession of these bulgings may continue to appear for one or two minutes. This peristaltic wave is so gross that it could easily be seen at a distance of two or three yards and in two of my cases the mother or nurse specially noticed it. Upon this grossness I lay some stress, for it is of importance in the diagnosis.

Two questions obviously arise with regard to the diagnostic significance of the sign: 1. Can any other movement be mistaken for this peristalsis of the stomach? 2. Does visible peristalsis of the stomach occur in infants apart from this disease?

There are two movements which I have known to cause doubt in diagnosis. One is the voluntary irregular contraction of the muscles of the abdominal wall, which in an infant "squirming" about as an infant often will, especially when the abdomen is exposed for observation, may cause local bulgings in the hypochondrium or epigastrium, but these, although they may deceive the unwary, ought not to cause any real difficulty, for the bulging produced thus does not travel transversely across the epigastrium, nor does it appear and disappear with the slow, even regularity of the gastric peristalsis; moreover, it is definitely coincident with voluntary muscular effort. The other movement is much more difficult to distinguish; it is peristalsis of the transverse colon in certain cases where, owing to an unusual arrangement of parts, peristalsis is from left to right in a portion of the colon. In an infant who was taken to King's College Hospital with vomiting at the age of five weeks I found definite but very slight peristalsis passing from left to right in the epigastrium; the pylorus could not be felt and the peristalsis was so slight that I doubted its significance. The infant looked ill and was admitted and died with broncho-pneumonia and pleurisy. It was found that the transverse colon passed across from the hepatic flexure towards the left hypochondrium and then turned back upon itself into the right hypochondrium before passing finally across the epigastrium to the splenic flexure; it formed, therefore, an S-shaped loop in one part of which, of course, the peristalsis would travel from left to right. In this case the feeble character of the peristalsis had suggested during life that it was not due to hypertrophy of the pylorus. With regard to the second question I think it may be said that visible gastric peristalsis of such marked degree as that to which I have referred is during the first few months of life almost, perhaps quite, peculiar to hypertrophy of the pylorus. So far as my own experience goes I have never known it to occur apart from this condition.

But I have purposely emphasised the degree of peristalsis, for I have seen in infants with chronic vomiting and constipation, where there was no other evidence of pyloric hypertrophy and where simple treatment by careful feeding and aperients caused rapid cessation of the vomiting, a very feeble peristaltic wave passing over the stomach just after feeding. I suspect that this might be found more often if specially sought. The peristalsis in these cases was so slight that it could only just be detected by inspection of the abdomen obliquely in a good light; the pylorus could not be felt. Of course, it may be argued that such cases were very slight degrees of pyloric hypertrophy, and this I cannot disprove. The peristalsis to which I have referred as a characteristic sign of hypertrophy of the pylorus, and which was seen in all my cases except the first (which occurred some years ago before the methods of examination were known to me), is something altogether more striking than this and if it happens to occur whilst the abdomen is uncovered is as obvious to the layman as to the medical man.

Palpable thickening of the pylorus.—On deep palpation, usually just outside the right nipple line and about a third of the distance from the umbilical level to the costal margin, a hard lump, barrel-shaped, and seeming perhaps about three-quarters of an inch long by half an inch wide, is to be felt *at intervals*. This tumour, the hypertrophied pylorus, behaves exactly like an intussusception in its variations of palpability. We are all familiar with the intussusception tumour, which at one moment may not be felt at all and the next moment is so hard that it is obvious to anyone. So it is with the pyloric tumour; it is during peristalsis that it is to be felt; at other times the muscle is so soft that no amount of *tactus eruditus* will enable you to feel it. For this reason palpation should be made during the visible peristalsis of the stomach and at these times I suspect that with experience the pylorus could be felt in every case, although perhaps more than one examination may be necessary. Out of my 20 cases the pylorus was distinctly felt in 19. Occasionally, even when there is no visible peristalsis in progress at the time, the pylorus can be felt evidently undergoing contractions, being palpable and hard one moment and completely lost the next. Such contraction may be excited by gentle kneading with the tips of the fingers pressed deeply into the abdomen in the situation of the pylorus.

It may be doubted whether any assistance is to be gained from an anæsthetic in this examination; indeed, it seems probable that it might actually prevent detection of the pyloric thickening by hindering indirectly the occurrence of peristalsis; certainly any anæsthetic is quite unnecessary; tact, patience, and warm hands are much more likely to be successful. No doubt the diagnosis of pyloric hypertrophy

can be made with all but certainty from the visible, well-marked peristalsis of the stomach alone but it is my opinion that in every case the evidence should be clinched by feeling the thickened pylorus.

TREATMENT.

I shall preface my remarks by some general considerations on the treatment of this disease. You are all aware that within the past few years successful results have been obtained by operative relief of the pyloric obstruction—a method of relief which seemed at first to promise but little hope at so frail an age. But now it would seem that there is a danger lest the very brilliance of this success should lead us into adopting as routine a mode of treatment which, however greatly methods may improve, can never be otherwise than dangerous in an infant a few weeks old. If the disease were incurable by other and far less dangerous measures we might well accept the chance which surgery offers; but as I shall show you it is now quite certain that there are cases in which no operation whatever is necessary, and there are other cases in which the child's chance of surviving operation may be greatly increased by the use of simpler measures for a time until the infant is older and stronger and therefore in a better position for operative treatment. If, as I hold, the hypertrophy be merely a secondary phenomenon, the result of spasm, then we have a rational basis for adopting such treatment as may tend to allay the spasm, and if this can be done one may suppose that just as the hypertrophied muscles of the athlete degenerate when he ceases his exercises so the hypertrophied pylorus loses its hypertrophy and partly from the diminution in the thickness of its wall, but much more from the cessation of spasm, the obstruction ceases to exist. This seems to me the most natural explanation of the complete recovery which occurs in some well-marked typical cases under such simple treatment as repeated stomach washing and sometimes even with simple care in feeding. How these measures allay the spasm I know not, but that they do is I think actually demonstrable in the gradual disappearance not only of the vomiting but also of the two characteristic signs which I have mentioned.

Passing now from theory to more practical considerations I would warn you that by whatever method this disease is treated, whether by medical or by operative measures, the medical man must be prepared to give much time and much care to the case, not for a few days but for many weeks, if the infant's life is to be saved. It might be imagined that operation, inasmuch as it relieves all symptoms of pyloric obstruction forthwith, would solve all difficulties at once and that after the few days immediately succeeding the operation but little care would be required. As a matter of fact it is often far otherwise and the infant's life hangs in the balance for several weeks after operation.

One factor in success I will mention here, for it is equally important whatever method of treatment is adopted—namely, an accurate weighing-machine. Variations in weight, so helpful a gauge in most infantile diseases, are of the utmost importance in this condition where the requisite changes in the feeding may be many and may be of vital necessity and often have to be determined by the loss or gain of an ounce or two.

Treatment by dieting only.—As already mentioned, many cases are improved temporarily by change of diet, but it is probably very rarely that a cure can be effected by such treatment alone. Dr. H. Willoughby Gardner of Shrewsbury has published the case of a male infant whose vomiting began at the age of eight and a half weeks and who showed a peristaltic wave "almost the size of a small Tangerine orange" and had also a palpable thickening of the pylorus. The infant was fed with whey only for a time, then malt was added, then barley water and maltine were given occasionally, and gradually raw meat juice and white of egg were given also. For a long time all residue-leaving food was avoided and the amounts at each feed were only slowly increased from a teaspoonful every 20 minutes to two, three, and four teaspoonfuls at longer intervals. The vomiting gradually subsided, all symptoms disappeared, and the child at the age of ten and a half months weighed 20 pounds. I have had one case in which the effect of even simpler dietetic measures was equally striking. A female infant, aged six weeks, was brought for persistent vomiting which had begun at the age of three weeks; the vomit was said to be "shot right out," coming through the nostrils as well as the mouth. The infant had been carefully fed with milk and barley water. A well-marked wave of gastric peristalsis was seen but on the two occasions on which I saw the child at this stage I was unable to feel the pylorus. The food was changed to peptonised milk and some bismuth was given. Four days later gastric peristalsis was still very obvious and vomiting continued; gradually, however, the vomiting became less and after about four weeks it ceased. The gastric peristalsis also gradually disappeared and when I saw the infant again at the age of seven and a half months she weighed 15¾ pounds and was perfectly healthy. In this case the failure to detect palpable hardening of the pylorus may be considered to make the diagnosis less than absolutely certain but it does not alter the importance of the clinical fact that an infant with chronic, very forcible vomiting and with well-marked visible peristalsis of the stomach recovered gradually with simple alteration of food.

Treatment by nasal feeding.—My colleague, Dr. F. E. Batten, has published a case which I also had the opportunity of watching, in which an infant, aged 11 weeks, with typical symptoms and with the two characteristic signs pronounced, recovered completely with nasal feeding. All feeds (consisting of two ounces of milk and one ounce of barley water) were given by the nasal tube for 27 days, except on one day when bottle-feeding was unsuccessfully tried. I have not used this method myself; it has the disadvantage that it is liable to cause troublesome excoriation of the nostrils.

Treatment by stomach washing.—This is the method which, apart from operation, promises, I think, to be of most value and it is my own opinion that when careful feeding with some thin fluid, such as whey and raw meat juice, fails after a trial of a few days to arrest the loss of weight, which is the chief indication of the gravity of the vomiting, stomach washing should be given a trial in every case, the duration of its trial to be determined by its effect upon the weight. It is certain that some cases which, so far as can be judged clinically, are in every way typical instances of pyloric hypertrophy and which show just as marked signs, a peristaltic wave travelling in bulging prominences across the epigastrium and a hard palpable pylorus, recover completely and so far as my present experience goes show no tendency to recurrence after no other treatment than stomach washing.

The stomach is washed out twice daily for several weeks just before a feed and then once daily for some weeks longer with a solution of sodium bicarbonate (two grains to one ounce) through a Jacques's soft rubber catheter, No. 12 or 14. The frequency of the washings and the duration of treatment depend upon the improvement in the vomiting and especially upon the weight, which should be taken every alternate day. How soon should improvement be expected? Not necessarily at once. In three of my cases which subsequently gained weight steadily under this treatment the weight had remained almost stationary, or even fallen two or three ounces at one weighing and regained its former level at the next, for two or three weeks, in one case for five weeks, before continuous gain began. So long as the infant is not definitely losing ground there is no need to rush to operation. Of course, with wasted infants at this early age every ounce is of importance and the utmost care and judgment must be exercised in deciding for or against the continuance of medical treatment; certainly so long as there is any gain in weight operation may, and in my opinion should, be deferred. The food during this treatment has generally consisted of whey with raw meat juice or a very weak peptonised milk mixture, perhaps with a very small quantity of cream. As to the actual results of the treatment in my own cases, two recovered completely without operation, thanks to the patience and perseverance of their medical attendants; one patient was under the care of Mr. A. Reeves of Streatham Hill and the other was under the care of Mr. C. F. Wakefield of Horley. The former patient I saw first at the age of eight and a half weeks; he showed, in addition to chronic forcible vomiting, very marked visible peristalsis of the stomach and at times the pylorus could be felt. He had lost 2 pounds ¾ ounce in weight since birth. The stomach was washed out first twice and then once daily for 19 weeks. All vomiting gradually ceased, the weight after two and a half weeks began to rise steadily, the two characteristic signs disappeared, and when he was last weighed at 14 months old he had been quite well for more than six months and weighed 23½ pounds. The other patient I saw first at the age of eight weeks. He was wasting and had been vomiting forcibly since six and a half weeks old; he showed the two characteristic signs in a marked degree.

Mr. Wakefield washed out the stomach at first twice and then once daily, then from two to three times per week for 16 weeks. During this time all symptoms and signs had gradually disappeared and the patient is now, at the age of two years and seven months, a bonny, healthy child weighing 35 pounds.

At the present time I have under my care in King's College Hospital an infant who, at the age of three weeks, was brought with the usual history and the two characteristic signs. My house physician, Mr. G. P. Young, has washed the stomach out twice daily for ten weeks and although for the first five weeks the weight was almost stationary and some vomiting continued the weight then began to rise and the child, whose weight on admission was 5 pounds 14 ounces and who was so feeble and puny that laparotomy would have been a desperate measure, has gained 22 ounces in the last five weeks and now weighs 7 pounds 4 ounces and has altogether more strength and vitality.

In another case an emaciated infant, with the usual signs and symptoms of pyloric hypertrophy, aged seven weeks, and already "almost too feeble to cry," was treated by stomach washing for six weeks; at first she gained weight slowly if at all and after about a month was only half an ounce heavier than when washing began; then she began to gain weight steadily and in 13 days had gained 13½ ounces. The child being now stronger it was decided to operate. From the day of the operation, although the vomiting was stopped thereby, continuous marasmus occurred and the child died in convulsions 25 days after the operation. It is easy to be wise after the event but here the steady gain in weight which had commenced before the operation makes it probable, in the light of the two cases already mentioned, that had the stomach washing alone been continued the child would have recovered.

In one case after washing out the stomach for 14 weeks there had been a gain of 22 ounces but progress was so slow that operation was done and the child recovered. In two other cases where stomach washing was done for a few days only there had already been slight gain in weight but it was decided to operate.

Whether the weight rises at once or not there is usually a marked diminution of the vomiting after the stomach has been washed out for a few days; but this must not be taken as an indication for stopping the stomach washing until the infant has been making steady and considerable progress in weight for several weeks.

Having said thus much of the success of stomach washing in this condition it is only right to mention its failures and possible risks; in four cases where stomach washing was tried for a few days only there was no improvement; in one case death occurred with some pyrexia about 48 hours after stomach washing was begun, and although the necropsy showed no evidence of vomited material in the respiratory passages death may have been due to matter drawn into the lungs in vomiting during the stomach washing; if so it must be an exceedingly rare accident, for I have had infants' stomachs washed out many hundreds of times without such an occurrence. In another case a dry rotten tube was inadvertently used and the end broke off in the stomach, necessitating immediate resort to the operative treatment which we had intended to defer; the pylorus was stretched, but an accidental rupture of its wall was overlooked (the operation was done in great haste owing to extreme feebleness of the infant), and death occurred about 27 hours later. Such exceedingly rare accidents must, however, weigh but little, and I think it remains true that stomach washing is a procedure which should certainly be tried in the pyloric hypertrophy of infants before resorting to operation; in some cases it is sufficient alone to secure complete recovery, in others by increasing the nutrition and the strength of the infant and by enabling us to postpone operation till the infant is a few weeks older it increases the chances of success from operation; where, however, the weight is steadily diminishing for several days in spite of stomach washing the question of immediate operation must be considered.

Lastly, I would insist upon an important point—namely, that the degree of gastric peristalsis (I mean the size of the bulging wave which is seen) and the palpability of the hard pylorus are no criterion of the possibility or even probability of recovery or improvement by stomach washing or of the likelihood of necessity for operation; the most pronounced signs and symptoms may occur in cases which respond well to stomach washing alone.

Operative treatment.—The actual operation to be done, if any be necessary, is a question which falls outside my province; forcible dilatation of the pylorus, pyloroplasty, and gastro-enterostomy have each their advocates. Nine cases out of the 20 included in my series (one of which was only seen by me once in consultation and was subsequently operated upon successfully by Mr. H. J. Stiles of Edinburgh) were treated by forcible dilatation of the pylorus—all except one by my colleague, Mr. F. Burghard—and seven of these nine recovered. One of these died several months later from broncho-pneumonia. Operation has risks apart from those connected with shock and with the operation itself. There is a tendency to looseness of the bowels after it and also a difficulty of nutrition which in some of my cases seemed to make death from marasmus almost inevitable for some weeks after the operation, although they ultimately recovered; an important point this, which increases the need for careful consideration before embarking on operative measures, and which increases also the importance of previous stomach washing if thereby even a few ounces of weight can be gained.

As to the proportion of cases in which operation is necessary much more experience is required before a trustworthy estimate can be formed. It must be pointed out that three of the 20 cases in my series occurred several years ago before the modes of treatment were known and two are at present under treatment. In many cases, including several in my own series, stomach washing was not tried or was given up because it was assumed that the condition was incurable without operation. That in some of the cases operation is the only method of saving life is, I think, certain, but as I have already said there is no way of determining this until other measures have been thoroughly tried.

Harley-street, W.

ACUTE ASCENDING PARALYSIS IN CASES OF CHRONIC CYSTITIS.

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IN the comparatively limited field offered in my private practice, general and consulting, I have met with three cases of long-standing chronic cystitis which terminated fatally by acute ascending paralysis of a most malignant type. Although urinary paraplegia has been generally recognised by the profession for 70 years, since 1833 when Stanley directed attention to the malady in a communication to the Royal Medical and Chirurgical Society, I can find no allusion by authors dealing either with urinary diseases or with Landry's paralysis to the occasional association of the latter ailment with chronic cystitis. Stanley gives a short note of the case of a man admitted with gonorrhœa and phimosis into St. Bartholomew's Hospital, under the care of Dr. Erle, who died suddenly three weeks after admission and 12 hours after paraplegia had set in; but Stanley expressly mentions that the paralysis was not higher than the waist and as the man suddenly fell back in his bed and died the case was certainly not identical with those which occurred in my practice. Saundby gives the case of a man, aged 60 years, who was admitted into the General Hospital at Birmingham and who died four weeks after the onset of symptoms of a progressive paralysis. The disease here was possibly pathologically of the same nature although not showing the same terrible rapidity in its course as did the cases of which I will now detail the salient points.

CASE 1.—The patient was a man, aged 40 years. When 15 years old he fell astride a rail and injured his perineum. Ten years later he came under my care for retention of urine and stricture of the urethra and was treated in the Peterborough Infirmary. The retention had come on gradually, the patient having gone about habitually with a distended bladder. He never completely lost the chronic cystitis, which did not inconvenience him greatly and did not prevent his taking and working a baker's business. He seldom sought medical aid unless there was an acute exacerbation or some indication of the stricture requiring dilatation. In April, 1877, such an exacerbation occurred and the patient

had been under treatment by my partner Dr. G. Kirkwood and myself for nearly a month when, on the morning of May 19th, I was sent for and found that in the course of the previous night he had felt numbness in the feet and some loss of power in the legs. When I saw him there was paresis of the limbs up to the thighs. By the evening the paralysis had extended upwards to the arms and the thorax and the breathing was already embarrassed. The symptoms rapidly progressed and death took place 18 hours after their onset.

No post-mortem examination was made but it seemed probable that some direct causal relation between the urinary disease and the rapidly fatal almost fulminating ascending paralysis must exist. My notes of the case are very meagre but to the best of my recollection the patient did not require the use of the catheter or bougies during this last illness.

CASE 2.—The patient, a man, aged 62 years, was first seen by me about the year 1877, when, in consultation with Dr. C. N. Elliott of Oundle, I operated upon him for a stricture of the meatus of the urethra for which he sought medical aid only when the symptoms of distended bladder and cystitis with painful micturition made his life intolerable. A few years later, having come to live close to Peterborough, he came under my care and I learned that he had never lost his cystitis.

On Dec. 31st, 1886, I was called to him on account of an acute exacerbation of his bladder trouble, accompanied with much malaise and some fever. The symptoms were not urgent, there was no difficulty in micturition, and no catheter was passed. I saw him again on Jan. 2nd, 1887, when he was somewhat better. He was not visited on the 3rd but on the early morning of the 4th he experienced uncomfortable sensations and some muscular feebleness in the lower limbs and at my visit about midday I found distinct indications of paraplegia. The sudden onset of the paralytic symptoms, with the history of long-standing cystitis, &c., and the feeble general condition reminded me at once of the case which I had seen ten years previously. I gave a prognosis which led to the patient promptly settling his affairs. By the 5th the symptoms had made considerable progress and early on the morning of the 6th, 48 hours after the first indication of paralysis, the patient succumbed. A necropsy was not allowed.

CASE 3.—This case was seen by me in consultation with the late Mr. W. J. Pilcher of Boston, whose son, Mr. C. W. Pilcher, has furnished me with notes of the case. The patient, a man, aged 67 years, who resided at Boston, had for many years suffered from chronic cystitis and for the three months preceding his death had been under Mr. Pilcher's care suffering from prostatic disease and cystitis requiring catheterisation. He had been confined to his bed for some time. On the morning of March 13th, 1894, when the patient got out of bed, he appeared feeble and unsteady on his feet. He was catheterised as usual by Mr. Pilcher and in the course of the day I was sent for. I saw the patient at about 8 P.M. I noticed when I wished to feel his pulse that the movements of the hand and arm were impaired and on further examining into the history recognised that I had another case of the same character as Cases 1 and 2. Already, only 12 hours after the onset of the symptoms indicating implication of the nerve centres, the paralysis had progressed upwards until the upper extremities were involved. With my experience of the former cases I gave a prognosis of urgent danger, demanding the immediate settlement of the patient's affairs. This opinion was justified by his death 18 hours after the first onset of the paralytic symptoms. No necropsy was made.

Each of these three cases of progressive ascending paralysis is distinguished by the sudden invasion of the attack, by its terribly rapid progress, and by the fact that it occurred as the fatal termination of a chronic cystitis. As to their pathology I am unfortunately able to give no certain information; they are recorded mainly for the benefit of those actively engaged in the prosecution of our art—those who, like myself, have little time or opportunity to advance our science.

I can recall only two other cases of Landry's paralysis of this virulent type in which I have been consulted, so that my experience is that out of five cases of this malady three were associated with urinary disease, and yet by none of the authors whom I have been able to consult is this association referred to. Farquhar Buzzard, in the important paper on the pathology and bacteriology of Landry's paralysis published in *Brain*,[1] speaking of the associated morbid conditions met with sufficiently often to justify their mention, names only two—enlargement of the spleen and evidence of extensive pleurisy in the form of old and recent adhesions. But in the light of my experience I cannot believe that the absence of recorded cases must be taken as a proof of the rarity of the association of Landry's paralysis with disease of the urinary organs; it is rather that this association never having been recognised as causal in its nature cases have not been published. A very brief glance at the pathological history of the nervous affections known to be associated with disease of the bladder and at that of Landry's paralysis will, I think, help to show the probability of the occurrence of cases such as those which I am reporting in which, as I believe, the one disease gave rise to the other. Although rarely alluded to by writers on diseases of the urinary organs, "urinary paraplegia" has, as I have already said, been recognised since Stanley, in 1833, directed attention to the malady, accounting for it in accordance with the dominant pathological theory of that date as a form of reflex paralysis, and even 53 years before this Troja (as quoted by Leyden [2]) stated that violent inflammation of the kidney may produce an irritation of the nerves of that organ which may extend to the nerves of the spinal cord giving rise to paralysis and loss of sensation in the lower limbs.

Gull, in a paper published in Guy's Hospital Reports for 1861, attacked the wavering faith in the nervous reflex view of the pathology of urinary paraplegia, contending that it was due to an inflammation of the cord which escaped detection in fatal cases owing to the imperfection of the examinations made at that time (1861). In this paper he enumerates the characteristics of urinary paraplegia under 15 heads, the second, third, and fourth of these being: (2) usually only lower limbs paralysed; (3) no gradual extension of the paralysis upwards; and (4) usually paralysis incomplete; from which it is clear that every character of "the symptom complex" (Farquhar Buzzard) which we call Landry's paralysis is wanting in "urinary paraplegia" as hitherto described.

Leyden,[3] in a clinical lecture on the subject of reflex paralysis, goes fully into the history and pathology of urinary paraplegia and he concludes that in a considerable number of cases of paraplegia urinaria an anatomical affection of the cord has been proved in the form of a myelitis which begins in a circumscribed lesion in the upper part of the lumbar enlargement. He assumes that the inflammation first passes to the nerves and induces in them a progressive neuritis which, as has been proved by experiment, may lead to myelitis. He concludes that this may therefore be looked upon as the most natural and frequent mode of occurrence in paraplegia urinaria.

Hurry Fenwick,[4] who gives a fuller consideration to the matter than any other of the writers on urinary diseases whom I have been able to consult, while he points out that it would be rash to throw over entirely the possibility of reflex paralytic symptoms in connexion with urinary diseases, accepts the more recent view of the pathology of urinary paraplegia as expounded by Leyden and others.

Beyond this stage the pathology of urinary paraplegia has not been advanced. I can find no record of bacteriological investigation in this malady. Affections of the bladder associated with, but secondary to, disease of the nervous system have not, I think, any bearing on the question under consideration, therefore I now pass briefly to the history of Landry's paralysis, by which I mean acute ascending paralysis such as that which proved fatal to my patients, a mortal malady which until now, as Farquhar Buzzard points out, is to us only a "symptom-complex," not a disease.

Landry, in his original paper,[5] published ten cases of ascending paralysis showing a pernicious and malignant character, differing from other cases of general progressive paralysis characteristic of well-known morbid conditions in the essential point that there was in these cases an absence of every appreciable nervous lesion. This, which he regarded as the essential characteristic, can no longer be so regarded, as since 1859, when Landry's paper was published, the microscope, at first unaided by the various hardening and staining

[1] Brain, 1903, p. 94.
[2] German Clinical Lectures, New Sydenham Society, vol. lxvi.
[3] Op. cit.
[4] Cardinal Symptoms of Urinary Diseases, 1893.
[5] Gazette Hebdomadaire de Médecine et de Chirurgie, vol. vi., 1859.

processes, and latterly with their most valuable help, has been brought into use for the examination of the nervous structures and the number of fatal cases of acute ascending paralysis in which no pathological change can be found has been proved to be very small. In the great majority there are microscopical changes in the cord and in the meninges such as could not be detected by the pathologists of 1859, and the opinion of the most recent investigators is that the symptoms are due to an acute intoxication of the nervous system caused by microbic toxins.

Farquhar Buzzard, after a careful consideration of the results of the bacteriological and microscopical examinations of these cases, concludes that it has been shown by investigations on man and the lower animals that the clinical manifestations of Landry's paralysis are the result of a local infection, a general pyæmia, or, lastly and most frequently, of an acute intoxication. Beyond this stage he has himself advanced the pathology of the disease by his discovery of an organism which he regards as specific and as the cause of the disease, although he is careful to say that he does not as yet claim to have in any way proved that this is the only microbe that can produce the fatal toxins.

Assuming, then, that it has been proved by competent investigators that Landry's paralysis is an intoxication of the nervous centres due to infection by specific microbes and that urinary paraplegia is the result of the spreading from the urinary organs to the lumbar portion of the cord of a specific inflammation, I think we have grounds to justify a probable explanation of the pathology of the cases to which I am directing attention. In every infection three factors are necessary: (1) the presence of microbes having active infective powers; (2) a medium in which these microbes when conveyed to it can develop; and (3) the resistant power of the tissues must be weakened. I venture to suggest as a provisional view that in my cases these factors existed. First, the specific microbes were to be found in the urinary organs, probably in the bladder; secondly, at a certain stage of the disease they were conveyed along the same course, almost certainly the nerves, by which inflammation spreads from the urinary organs in paraplegia urinaria to the cord, in which medium they developed rapidly, producing a virulent intoxication; and thirdly, the tissues were weakened by the long-standing cystitis.

Whether this view be accepted or not, whether it be confirmed or disproved by future investigation, the clinical facts remain the same; and although in neither of my cases did my being able to come to a correct diagnosis and prognosis prolong or save the life of the patient, I look forward to the time when, the pathological association of this acute ascending paralysis and chronic urinary disease having been definitely established, remedial measures (probably organo-therapeutic) may be discovered which may stop the rapid course of the malady and avert its fatal termination. It is with this hope that I press these observations on the notice of my fellow practitioners and especially of those members of the profession who can devote themselves to pathological investigation.

Peterborough.

FURTHER NOTES ON THE AFTER-HISTORY OF CASES OF PYLORO-PLASTY.

BY G. GREY TURNER, M.B. DURH., F.R.C.S. ENG.,
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IN THE LANCET of Feb. 11th, p. 351, there appeared a short paper on Pyloroplasty by Mr. Rutherford Morison. In that paper I am credited with having followed the after-history of his patients and in support of this some few brief particulars of the cases are given. As a matter of fact I prepared a table giving full details of each patient with a note of their progress up to the last time I heard of them in August, 1904. This table, very much to my regret, has been lost after leaving our hands. I wish to take this opportunity of amending the very brief particulars given in Mr. Morison's paper, so that those who are interested in this subject may be better able to judge why that surgeon still adheres to an operation which appears to have a rapidly waning popularity.

CASE 1.—The patient, a woman, aged 48 years, was operated on in October, 1894. The pylorus was thick and firm and would not allow a pair of closed Spencer Wells forceps to pass. She has remained well ever since the operation. She takes ordinary food and has very good health. In August last she weighed 10 stones 7 pounds, which is more than double her weight at the time of the operation and about three stones more than her previous normal weight.

CASE 2.—A woman, aged 37 years, was operated upon in October, 1895. The pylorus was bound down but was œdematous and reddened and on the upper margin there was a cicatrix; it only admitted the tip of the little finger. The patient has remained well ever since the operation. At present she has better health than she has enjoyed for years, can take any kind of food, and has no trouble whatever. In August, 1904, she weighed 9 stones—a gain of 1 stone 3 pounds since the operation.

CASE 3.—The patient, a man, aged 31 years, was operated upon in January, 1896. There was a hard nodular mass surrounding the pylorus which admitted the tip of the forefinger. The patient has been in very good health since the operation, has no stomach trouble, takes any kind of food, and in August last weighed 10 stones, a gain of 2 stones 7 pounds since the operation.

CASE 4.—A man, aged 32 years, was operated upon in August, 1896. The pylorus would only admit a pair of closed Spencer Wells artery forceps. The patient has remained well ever since; he went through the South African war without any stomach trouble and at present, in spite of drink and poor food, he has none of his old symptoms. When seen in August, 1904, he had just recovered from pneumonia and looked thin and ill but he was able to take as much of any sort of food as he was able to get. His general health is better than before and he weighs 9 stones, a gain of 1 stone 9 pounds.

CASE 5.—The patient was a man, aged 25 years, who was operated upon in October, 1896. The pylorus looked and felt normal from the outside but would only admit the tip of a Spencer Wells artery forceps. He has remained well since operation; his general health is better than before and he can take ordinary food. In August last he weighed 9 stones 7 pounds, a gain of 2 stones 7 pounds since operation.

CASE 6.—A man, aged 42 years, was operated upon in March, 1897. There was no organic change at the pylorus and it was then suggested that the symptoms might be due to spasm. The patient has remained fairly well since operation; he takes ordinary food in small quantities and has no vomiting but he complains that he does not gain strength. In August, 1904, he weighed 11 stones 10 pounds, a gain of 1 stone 5 pounds. He does his ordinary work.

CASE 7.—A man, aged 38 years, was operated upon in March, 1897. An ulcer was found on the posterior wall of the pylorus but there is no note as to stricture. This patient remained very well until the early part of 1901, when he had a "stomach attack," which lasted for two weeks; in spite of this in June, 1901, he weighed 10 stones—a gain of 1 stone 7 pounds. Since then he has had a recurrence of his trouble each spring; he had pain after food and vomiting, but between the attacks was fairly well. For about three months before his re-admission to the hospital in June, 1904, he was quite ill with pain and vomiting and had lost flesh. The stomach was very much dilated and the vomit contained sarcinæ. On exploration the stomach was found to be dilated and there was an œdematous mass at the pylorus but there was no certain evidence as to its nature. Posterior gastro-enterostomy was performed; he made a good recovery and there followed a very rapid gain in weight.

CASE 8.—A woman, aged 39 years, was operated upon in September, 1897. The pylorus would not admit the tip of the forefinger. The patient has remained very well since the operation, her health is better than before, and she takes ordinary food. Since she reported herself in June, 1902, she has vomited once or twice every three months but there are no other symptoms and her gain in weight is now greater than it was at that time. In August, 1904, she weighed 8 stones 3 pounds, a gain of 2 stones 1 pound since the operation.

CASE 9.—A man, aged 56 years, was operated upon in September, 1897. The omentum was adherent to the pylorus which was hard to the touch and only admitted the tip of a

closed Spencer Wells forceps. The patient remained very well until two years ago when he began to suffer from indigestion with occasional vomiting; for two or three months he would remain free from symptoms but a year ago his attacks became more frequent. During the six months preceding the second operation he vomited every day and had to live entirely on liquids. At the second operation in May, 1904, the stomach was found to be dilated and there was a mass at the pylorus; there were no positive signs of malignancy. Posterior gastro-enterostomy was performed and up to the present he has done well.

CASE 10.—The patient, a woman, 46 years of age, was operated upon in November, 1897. The pylorus admitted the little finger. She remained very well until the autumn of 1903, when she had a transient return of her old symptoms. She can now take ordinary food and her general health is better than before and she has gained 2 stones 7 pounds, weighing in August last 7 stones 12 pounds.

CASE 11.—A man, aged 23 years, was operated upon in June, 1898. No ulcer or constriction was found and the symptoms were supposed to be neurotic. The patient has remained well without any of the old symptoms and he can take ordinary food. In August last he weighed 8 stones 6 pounds, a gain of 1 stone since the operation.

CASE 12.—A man, aged 41 years, was operated upon in July, 1898. There is unfortunately no note of the condition of the pylorus. The patient has had very good health since the operation; once or twice he has had slight indigestion but he takes ordinary food and his general health is better. He has gained about 2 stones since the operation.

CASE 13.—A woman, aged 36 years, was operated upon in July, 1898. The pylorus was like a firm ring which only admitted the tip of the little finger. The patient has been very well since the operation and has had no trouble beyond an occasional bilious attack. She takes ordinary food. In August last she weighed 8 stones 6 pounds, a gain of 2 stones 4 pounds since the operation.

CASE 14.—A woman, aged 39 years, was operated upon in November, 1898. The pylorus admitted the little finger. This patient was never robust, she has been better since operation and can take ordinary food with care, though she occasionally has pain and vomiting; before the operation the pain was continuous. In August last she weighed 6 stones 7 pounds, a gain of 7 pounds since the operation. In 1901 Dr. W. H. Mackinlay reported as follows: "Patient never was robust and is not now robust, but from leading a life of constant pain she now suffers an inconsiderable amount. She is profoundly grateful for benefit derived."

CASE 15.—The patient, a man, aged 46 years, was operated upon in November, 1898. The pylorus would only admit a closed Spencer Wells forceps and there was the scar of an old ulcer just on the stomach side of the pylorus. He has remained well ever since the operation. He has none of his old trouble, takes any kind of food, and in August, 1904, weighed 14 stones 5 pounds, a gain of 3 stones 5 pounds since the operation.

CASE 16.—The patient, a woman, aged 45 years, was operated upon in March, 1899. The finger could be passed through the pylorus but there was a scar on its posterior wall. For 12 months she was very well and could take any sort of food but at the end of that time she began to complain of her old symptoms, especially pain after food and vomiting. She continued to have "attacks" of stomach trouble and by June, 1903, she was in a miserable state, being afraid to eat on account of the pain which food produced; she had lost a great deal of weight. The abdomen was reopened; there were no great dilatation of the stomach and no mass at the pylorus, no ulcer was seen or felt in the interior of the stomach, and the new pylorus admitted three fingers with ease. Anterior gastro-enterostomy was performed and recovery was uneventful. For six months the patient remained well and was able to take any kind of food without trouble. She had gained 1 stone 4 pounds since the operation. Her symptoms now began to recur but she has not continually lost ground, for from time to time she has periods of good health without pain or vomiting.

CASE 17.—The patient, a woman, 36 years of age, was operated upon in May, 1899. There is no note of the condition of the pylorus but the stomach was very much dilated. She has remained well since the operation without ever having any trouble. In August last she weighed 8 stones 10 pounds—a gain of 2 stones 10 pounds.

It is scarcely necessary to add that in every instance the operation was performed for symptoms of stricture of the pylorus and that in every case physical examination disclosed a dilatation of the stomach.[1]

Newcastle-upon-Tyne.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF RUPTURE OF THE BLADDER IN A YOUNG CHILD.

BY JOHN CROPPER, M.D. CANTAB.

ON Sept. 26th, 1904, a fellah boy, aged four years, fell from a flat roof 12 feet high on to his stomach, striking a coping of stone. He suffered great pain but when he was brought to me soon afterwards I could discover nothing beyond some bruising, especially on the left side of the abdomen. I was told later that he had voided urine the same evening. The next day the pain was worse with great distension of the abdomen and on my return in the evening I passed a No. 1 indiarubber catheter, drawing off less than half a pint of bloody urine at the patient's home, the catheter being left in position. The distension was considerably relieved and the bowels were opened. His pulse rate was 150 and his temperature was slightly raised.

I explained the condition of affairs to the parents, telling them that the bladder was certainly ruptured and that an operation was urgently required. On consultation with friends they refused either to have an operation performed or to allow the child to be taken into the hospital in Jerusalem. On the next day (Sept. 28th) he had slept and was much relieved; his bowels had been moved twice and he had passed urine twice; his temperature was 100° F. On the 29th the distension had increased and the motions were foul and light coloured. Five ounces of clear urine were passed but the child looked worse; his temperature was 99° and his pulse rate was 150. Seeing his condition and knowing that he had little chance of recovery the parents, convinced also by some very plain speaking on my part, consented to an operation which was accordingly performed under ether on the afternoon of the same day. Before the operation the patient had a very bad ashy-grey colour; his abdomen was tympanitic in the upper half, while the lower half was dull and firmly resistant, especially during the anæsthesia. An incision was made from below the umbilicus almost to the pubes. On reaching the peritoneum the bowel was found to be firmly adherent to it, but on separating the adhesions above the pubes much bloody urine at once welled up, the finger passing into a wide space bounded on either side by Poupart's ligament, which was very plainly felt. At the bottom of this cavity the bladder could be felt. The rupture in it was of course intraperitoneal, was to the right of the apex, and admitted two fingers easily. Owing to the thickness of the abdominal wall (at least one inch of fat) and the length of time (three days) which had elapsed since the accident I considered that any attempt to close the bladder was out of the question. Certainly in the event of want of union the bladder sutures would have complicated matters and probably led to a fatal result. Accordingly I passed a drainage-tube down to the bladder and packed the wound with gauze, leaving it otherwise widely open. The pulse rate after the operation was 180. The patient slept well. Next day he was in very fair condition and enjoyed the ride of ten miles into Jerusalem to the Hospital of the London Jews Society, proper nursing being impossible in his own home. For the first few days there was a good deal of offensively smelling discharge with the urine which drained away freely. On using a considerably stronger lotion than had been used at first—namely, a solution of perchloride of mercury of strength 1 in 2000 syringed through a catheter passed by the penis twice daily—the condition of things rapidly improved, and beyond a little silver nitrate solution (of strength 20 grains in an ounce)

[1] See tables in THE LANCET of Feb. 26th, 1898, p. 561, and in Brit. Med. Jour., Oct. 19th, 1901.

painted on the wound there was nothing to note in the treatment. In spite of a smart attack of remittent fever with splenic enlargement the wound was firmly closed on Nov. 5th. The only trouble after this was incontinence of urine which persisted for some days. The patient was discharged from the hospital in very good condition four or five weeks later.

In conclusion, it may be remarked that in native villages in this country almost the only accidents to children arise from falls from the flat roofs which are quite unprotected. In this case, as already stated, the child fell fully 12 feet.

Ramallah, Palestine.

NOTE ON A METHOD OF EXTENSION OF THE "GRIDIRON" OPERATION FOR APPENDICITIS WITHOUT DIVIDING MUSCLE FIBRES.

BY M. P. HOLT, M.R.C.S. ENG., L.S.A.,
MAJOR, R.A.M.C.

VERY occasionally the classical muscle-splitting operation unexpectedly fails to provide sufficient room. The following is a method which I have several times adopted of extending the area and which I have not seen described elsewhere. On such occasions the tendon of the external oblique is by a few touches of the knife separated from that of the internal oblique, where these begin to blend together for the formation of the sheath of the rectus, to well beyond the outer edge of the rectus and then retracted inwards; the line of splitting of the internal oblique and transversalis muscle is then carried on through their tendons well on to the rectus sheath for an inch or so; the remaining part of the anterior sheath of the rectus is then divided upwards, or downwards, whichever be desired, as far as is necessary; the rectus is then displaced inwards and the posterior sheath is similarly divided in a vertical direction, in a line a full inch nearer the middle line than the site of the outer border of the muscle. The triangular flap thus obtained is displaced outwards and downwards (or outwards and upwards, as the case may be). The incision in the peritoneum is easily extended to any desired point in the line of original incision and very free access is obtained. This method takes but a few minutes but its chief advantages are only obvious when the layers are severally united by sutures. When the posterior sheath of the rectus has been sutured, the rectus muscle secured by a few points in its original bed, and the anterior sheath similarly united, the internal oblique and the transversalis muscles will be found accurately lying together in the line in which they were split; the external oblique, of course, comes together without the least difficulty. In this way there has been no division of muscle fibres and the nerve- and blood-supplies to the rectus are practically untouched. The method provides precisely the same security against hernia as does the less extensive classical "gridiron" operation, a matter that cannot be overrated in young men. Drainage, if necessary, is made through a separate wound. I have used this method where a small localised abscess within omental adhesions due to a perforated appendix was found firmly glued to the posterior surface of the symphysis pubis and quite recently where an unusually long appendix was adherent by its tip behind the ascending colon close to the hepatic flexure, as well as in other less difficult cases. I quite recently saw in the dissecting room an appendix adherent throughout its whole length in front of the ascending colon, the tip lying actually on the hepatic flexure. Operating surgeons must necessarily have experienced many similar instances. I would emphasise that the method has only been used for those cases where the abdomen has already been opened by McBarney's incision and where investigation has shown that unexpectedly much more room is necessary and it is in no way recommended to take the place of a "right semilunar" incision. This method of extension of the "gridiron" operation can be demonstrated very easily on the cadaver.

I would add that Lennander's method of displacing the rectus *outwards* after a "right semilunar" incision is far preferable to that in which it is displaced *inwards*, as by the former absolutely no interference with either blood- or nerve-supply is risked.

Royal Infirmary, Dublin.

A Mirror OF HOSPITAL PRACTICE, BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv., Proœmium.

LEEDS GENERAL INFIRMARY.

TWO CASES OF DOUBLE MALIGNANT TUMOURS OF THE INTESTINES.

(Under the care of Mr. A. W. MAYO ROBSON, Dr. C. M. CHADWICK, and Mr. R. LAWFORD KNAGGS.)

CASE 1.—A man, aged 35 years, was admitted under the care of Mr. A. W. Mayo Robson to the Leeds General Infirmary on May 27th, 1902, with symptoms of chronic intestinal obstruction. These had commenced in December, 1901, and he had lost three stones in weight. No tumour could be felt in the abdomen and on examination the rectum was found to be healthy. At the operation on May 29th a stricture, causing almost complete obliteration of the lumen of the bowel, was found about the middle of the ileum. It was excised and end-to-end anastomosis was performed. No secondary deposits were seen. The growth (No. 2529 C in the Museum of the Royal College of Surgeons of England) is described as a portion of jejunum "which was excised for the close stricture shown, the constriction being due to the shrinkage accompanying the growth of a carcinoma which has invaded the muscular wall and advanced into the tissues beyond." It was obviously a carcinoma but no microscopical examination had been made as the interest of the specimen lay in the tightness of the stricture. The patient was readmitted on July 29th, 1904, under the care of Mr. R. Lawford Knaggs. He had had good health since the operation till about five weeks before, when he began to suffer pain in the sacral and left iliac regions and had experienced some difficulty with his bowels. In the scar of the old incision there were two hard masses. One at the upper end was as large as a walnut and involved the deeper structures of the abdominal wall. The other at the lower end was larger and felt as if it were not limited to the parietes but extended to parts beneath. Within the rectum, two inches from the anus, the finger impinged on a raised mass on the anterior wall which proved to be the indurated edge of an excavated ulcer large enough to lodge the terminal phalanx of the examining finger. The ulcer was about three-quarters of an inch deep. The mass was firmly fixed to the parts in front of the bowel. Several enlarged and hard glands could be felt between the sacrum and the posterior wall of the bowel and both glands and the posterior bowel wall felt tethered to the bone. Examination was not painful. A left lumbar colotomy was performed on August 2nd and the patient went home on the 17th.

CASE 2.—A man, aged 27 years, was admitted to the Leeds General Infirmary on Nov. 26th, 1903, under the care of Dr. C. M. Chadwick for an enlarged liver and a malignant growth in the rectum. He had suffered from typhoid fever when he was 21 years of age. In July, 1903, he began to have diarrhœa and to lose flesh. He had had "hæmorrhoids" for the last 12 months. He suffered from constant pain in the sacral region and the tenesmus was so distressing that he was transferred to the surgical wards and inguinal colotomy was performed to lessen his sufferings. He died two or three weeks later on Dec. 21st.

Necropsy.—The stomach appeared to be "trifid." On laying it open, however, it was found that the appearance was caused by a polypoid growth involving and distending the parts in the region of the pylorus. With regard to the rectum and the anus, there was a mass of growth (ulcerating) at the lower end of the rectum involving the anal mucous membrane and the skin about the anus. There was another growth constricting the gut just below the colotomy wound. The mucous membrane between these growths presented a curious polypoid appearance. Otherwise the intestines were normal. The liver weighed 12 pounds. There were weak

adhesions to structures in the neighbourhood. The surface showed several large umbilicated growths of a cream colour. On section almost the whole of the liver was seen to be occupied by large masses of secondary growths uniformly distributed. The gall-bladder was normal. The pancreas, the spleen, the kidneys, and the thoracic viscera were normal.

The microscopical examination of the different tumours may be briefly stated. The stomach growth was an adenoma. There was an overgrowth of glandular tissue but the arrangement was regular and nowhere showed any tendency to invade the muscular layer. The polypoid projections on the rectal mucous membrane were also adenomatous in character; in some places the glandular cells showed a disposition to proliferate. Both here and in the stomach there was evidence of inflammatory infiltration. Both upper and lower rectal growths were columnar carcinomata. The secondary growths in the liver were also columnar carcinoma.

Remarks by Mr. LAWFORD KNAGGS and Dr. O. C. GRUNER.—It has been already stated that the polypoid condition of the rectum was limited to the tract between the two growths and that the mucous membrane was healthy above the upper one. This fact would seem to point to the development of the "polyposis" subsequently to the formation of the upper growth. And if this inference is correct the altered condition of the mucous membrane was due to influences introduced by that growth. At the anal extremity of the rectum the polypoid mucous membrane gave place to another carcinomatous tumour. Which of the two malignant growths was the first to make its appearance? The microscopic appearances are if anything rather in favour of regarding the upper one as the older of the two; the fact we have alluded to in connexion with the limitation of the polyposis would tend to confirm this view. Further assistance may be derived from the probable origin of the anal growth. It is impossible not to associate that origin with the polypoid state of the mucous membrane. Where the irritation is naturally greatest—viz., at the anus—the proliferating glandular tissue has invaded the muscular layer and assumed the malignant type. A polypoid projection can be seen merging into the malignant tissue but the actual starting point of the malignant change cannot now be determined. The growth is too extensive.

What was the cause of the polyposis? Irritation or passive congestion? The only form of irritation that suggests itself is the passage of fæces retained above the stricture until they had become foul and offensive but if this had been the cause we should expect the intestine above the stricture also to have been affected. On the other hand, passive congestion was not unlikely to be produced by the constriction of the growth and its extension to the glands and lymphatics in the mesorectum. Unfortunately we have no post-mortem observation as to the implication of these glands.

The innocent character of the stomach tumour is clear. It cannot, therefore, be regarded as a secondary or metastatic growth. But it is undoubtedly the result of chronic inflammation and it is situated at the pyloric end where malignant disease most commonly occurs. Of the goal towards which it was tending there can be little doubt when the conditions connected with the anal growth are borne in mind. The term "pre-cancerous" may be fairly applied to it. The only possible connexion that it may have had with the rectal growth is through the dyspepsia which obstruction may have caused. We are unable to express an opinion as to whether the secondary growths in the liver were derived from one or both rectal growths.

Finally, our conclusions may be stated as follows: (1) There existed a tendency to cell proliferation and hypertrophy in parts of the gastro-intestinal tract when inflammation was excited; (2) the stomach growth was a direct result of this tendency and was not malignant; (3) the upper rectal growth was probably the primary disease; (4) the polypoid state of the rectum was in some way due to the presence of this upper growth; (5) the lower rectal growth was due to the simple tumours and the mucous membrane from which they arose developing malignant tendencies as a result of the anal irritation (it was independent of the upper growth and in no sense a "secondary" or metastatic tumour); and (6) the liver deposits were secondary to one or both of the rectal growths.

Microscopic report by Dr. GRUNER. — 1. The stomach. The polypoid condition was preceded by a rather œdematous condition of the gastric mucous membrane with some round-celled infiltration around the orifices of the glands. Near the hypertrophic portion the round cells became very abundant and there were even small accumulations like minute abscesses here and there in the submucosa. The polypoid portion showed long villous-like outgrowths covered by shrunken columnar epithelial cells. This appearance was continued all along the papillary mass. There was not the least tendency to ingrowth into muscular tissue. 2. The polypoid rectal mucous membrane. This consisted of numerous glandular elements lying in a very scanty vascular stroma. The cells lining the glands had the normal columnar shape but some of them exhibited a large number of superimposed nuclei, while other adjacent glands showed only a single layer of lining epithelium. This suggested something more than mere chance obliquity of section across the glands—namely, proliferative processes in the former glands. Many of the glandular cells showed much increase in their mucin content and in some places this was so abundant as to cause great distortion of the glands. There was no evidence of malignancy. 3. The lower rectal growth. As the mucous membrane was traced from above towards the growth the glandular elements were seen progressively to increase their proliferative tendencies until at the seat of growth the gland acini were actually embedded in groups of muscle fibres constituting true columnar-celled carcinoma. The cells lining these glands were more cubical in shape than were those lining the glands of the mucous membrane above and they did not show excess of mucin. Where the proliferation of mucous membrane was commencing there was definite evidence of inflammation in the interglandular connective tissue. 4. Upper rectal growth. The mucous membrane in the immediate vicinity of this growth was much more œdematous than that in the lower growth, the glandular elements being widely separated by a very loose connective tissue in which there was great accumulation of leucocytes. This inflammation extended no deeper into the intestinal walls than the mucous coat, and the outskirts of the growth had merely the aspect of overgrown glands without any tendency to invasion of tissue. This portion of the tissue passed continuously but rapidly into true columnar-celled carcinoma. The gland spaces in this growth were large, in marked contrast to those in the lower growth. The cavities were filled with mucoid material and the lining cells were distorted, presumably from the overproduction of mucin. The portions in the deepest parts of the growth showed tracts of dead cells amongst the carcinoma acini. There was not much fibrous tissue around the growth. 5. The liver. The liver substance in the neighbourhood of the secondary growths was profoundly altered. The vessels were surcharged with blood, the liver trabeculæ were attenuated, and the cells had lost their shape for some considerable distance away from the growth. There was, however, little cellular exudate from the vessels. The growth had the characters of a columnar-celled carcinoma resembling the rectal growths but not showing such large spaces as were seen in the upper one of the two. The cells were, however, much shrunken and the interstitial tissue was very loose. It would be impossible to state whether the secondary growths in the liver arose from one rectal growth more than the other but the stage of growth which each of the three growths presented showed that the secondary growths (the last to appear) were more like the lower rectal growth, which would thus be more recent in origin than the upper one (the gland spaces of which had become much larger and showed degenerative processes).

POLICE HOSPITAL, BANGKOK, SIAM.

A CASE OF LIGATURE OF THE LEFT SUBCLAVIAN ARTERY.

(Under the care of Dr. H. CAMPBELL HIGHET.)

THE patient in this case was a young man, a Siamese, who was admitted into the Police Hospital, Bangkok, Siam, in August with a fishing trident firmly embedded in the muscles around the front of the left shoulder. Mr. E. A. Bryan, the hospital assistant, finding that the prongs of the trident were too firmly fixed to be easily removed, administered chloroform and with much difficulty and some enlargement of the wounds extracted the weapon. This proved to consist of three prongs, each four and a half inches long, three-sixteenths of an inch in diameter, and furnished at about an inch from the point with a strong barb one quarter of an inch long. The three points formed an equilateral triangle, each point being one

and a half inches from its neighbour. The wounds were two and a half inches deep. As the trident was in a highly septic condition when it was thrust into the man's shoulder, and as it had been embedded there for over two days, it is not surprising that all the wounds were suppurating and that the arm and shoulder were much swollen and reddened. After some days' treatment the cellulitis seemed to improve but 11 days after admission hæmorrhage commenced and could not be controlled by plugging. On the night of August 30th the wound from which most blood was exuding was therefore enlarged and an attempt was made to tie the axillary artery in its third part. This was found to be impossible owing to the fact that a large portion of the artery was in a sloughing condition. The left subclavian artery was then tied in its third part, the operation being rendered somewhat difficult as the assistant had to maintain direct pressure on the bleeding point and so the shoulder could not be depressed. Three days after the operation a herpetiform eruption appeared on the left loin and on the right shoulder and upper arm accompanied by considerable fever and an icteric appearance of the skin and conjunctiva. The fluid from the vesicles was examined and found to be sterile. The man left the hospital practically well and was seen again by Dr. Highet two months later when the following note was made: "Seen at the Criminal Court to-day. Is well and strong; all wounds cicatrised; humeral and radial pulse imperceptible; movements of shoulder-joint very good; arm rather thinner than right arm but not markedly so."

Medical Societies.

ROYAL MEDICAL AND CHIRURGICAL SOCIETY.

Annual Meeting.

THE annual meeting of this society was held on March 1st, Sir R. DOUGLAS POWELL, the President, being in the chair.—The annual report showed that the financial condition of the society was extremely satisfactory but that the attendance at the meetings of the society left something to be desired. With a view to improve this it had been decided by the council to print abstracts of papers in advance and to send them with formal invitations to persons named by the authors. During each session at least one special discussion would be arranged. The President's address in connexion with the centenary of the society would be delivered on May 22nd and the Marshall Hall prizeman, Dr. Henry Head, F.R.S., would give an address on Afferent Nerves under a New Aspect on May 23rd. A banquet would be held on May 22nd at the Hotel Cecil, at which the society would entertain His Royal Highness the Prince of Wales and other distinguished guests. A conversazione would be held on the night of May 24th and during the week there would be an exhibition illustrating medical matters of 100 years ago.

The HONORARY LIBRARIANS announced that a card catalogue of the books in the library had been completed.

The PRESIDENT gave the Annual Address, in the course of which obituary reference was made to those Fellows of the society who had died during the last year. In discussing the work of the society the question of a possible amalgamation of the various metropolitan medical societies was raised and the advantages accruing from such a scheme in the way of economising time and money were clearly emphasised.—Dr. J. E. POLLOCK proposed, and Sir WILLIAM H. BROADBENT seconded, a vote of thanks to the President for his address and supported the idea of initiating an amalgamation of the societies.—Sir THOMAS SMITH proposed that the council of the society should be requested, with as little delay as possible, to invite the leading medical societies of London to arrange for a joint meeting for the purpose of considering the advisability of amalgamating and to take the necessary preliminary steps for that purpose.—The motion was seconded by Mr. D. H. GOODSALL and unanimously carried.

Sir W. H. Broadbent and Dr. T. Buzzard were elected new vice-presidents of the society. Dr. Howard H. Tooth, Dr. Dawson Williams, Mr. Clinton T. Dent, Mr. A. Marmaduke Sheild, and Mr. Thomas Wakley, jun., were elected new members of the council.

Discussion on the Subsequent Course and Later History of Cases operated on for Appendicitis.

An adjourned meeting of the society was held on March 7th, Sir R. DOUGLAS POWELL, the President, being in the chair.

The PRESIDENT resumed the discussion on the Subsequent Course and Later History of Cases operated on for Appendicitis. He said that he had nothing to add to the subject of absence of relief after operation in cases of appendicitis. He had met with pulmonary embolism many times in the sequel of injuries and of surgical operations and, without giving actual numbers, he felt sure that it had been more frequent in his experience after operations for appendicitis than after other operations. Although this complication did not appear from the statistics to be very common it was probable that many of the cases of pleural effusion and dry pleurisy occurring after operation were due really to pulmonary infarction. In Oppenheimer's series 16 per cent. of the acute cases developed pulmonary embolism. With a view to prevent this complication it was advisable in the chronic cases to keep the patient in bed for a few days before operation, to order a simple diet, and to give small doses of calomel as an intestinal antiseptic. An interesting case of secondary pulmonary infarction which had become tuberculous occurring some months after an operation for appendicitis had been observed in consultation with Mr. Charles Hartley and the patient was now progressing satisfactorily abroad.

Dr. H. P. HAWKINS drew attention to the fact that in spite of increased earliness of operation the mortality from appendicitis showed no fall and in some cases a slight rise as compared with a period of ten years ago. He accounted for this by a gradual rise in the severity of the disease which was occurring *pari passu* with its increased frequency. He agreed that a great reduction in the mortality was to be anticipated by continual insistence on early operation. As regards imperfect relief or recurrence of symptoms after excision he thought cases were few. Putting on one side cases where confusion occurred between appendicitis, floating kidney, and renal and biliary colic (the occasional difficulty of differential diagnosis being allowed), he believed that the rest of the cases of imperfect relief should be attributed to a colon neurosis. Of this group mucous colitis, a non-inflammatory motor and secretory neurosis, was the best known example, but it shaded off into minor grades of pure enterospasm of which a clinical description could be given. In all degrees of the neurosis, if the trouble occurred in the ascending colon with attendant neurasthenia and secondary hypochondriasis the appendix could be excised without necessarily giving relief.

Sir WILLIAM H. BENNETT believed that the real value of statistics lay in their relative rather than their absolute application and that those derived from hospital practice presented a gloomier picture than the truth. In cases of appendicular abscess it was not desirable to attempt to remove the appendix for the sake of making sure that the origin of the disease was destroyed. He had never regretted leaving the appendix in such cases but he had on more than one occasion regretted making the attempt to remove it. Complications often arose from inadequate operations in simple cases of appendicitis and the practice of leaving a stump was, in his opinion, often a source of after trouble. The fact that a stone in the right ureter might give rise to symptoms suggesting appendicitis was illustrated by a case in which a healthy appendix was found but in which a ureteral calculus was discovered at the operation and passed four days later per urethram. It was advisable to submit doubtful cases to examination by the x rays for the purpose of excluding this source of error. No prolonged pain in the scar was ever met with if a rule was made never to apply a ligature through the undivided peritoneum. Recurrence of symptoms had been present in three cases, in all of which a history of malaria, and in two of which a history of dysentery, had been noted. Fæcal fistulæ occurred in 5 per cent. of cases but many of these healed very quickly and would be better regarded as temporary fæcal discharges rather than true fistulæ.

Mr. C. B. LOCKWOOD stated that the main object of the discussion was to learn what happened to those patients who had had the appendix removed. It was clear that the method of proceeding by clinical statistics alone was incomplete and fallacious, mainly because so many possibilities were ignored and so much was omitted. The future of the patient must in a large measure depend upon the disease which existed in the appendix at the time of its removal. For instance, some were tuberculous, some were cancerous, and some were actinomycotic. Correct conclusions could not be arrived at by examining the appendix with the naked eye

and in a scientific inquiry clinical evidence should be supported by microscopical and, if possible, by bacteriological examination. Some of these requirements had been fulfilled in the synopsis of 200 cases of his own which he had provided. In a case of primary columnar-celled carcinoma of the appendix the disease was unrecognisable by the naked eye and although the cæcum and the end of the ileum were removed the disease continued to grow slowly in the pelvic glands and ultimately proved fatal. A section of the ordinary type of carcinoma of the appendix had been given to him by Mr. W. McAdam Eccles who said that on removal the nodule was thought to be tuberculous. If appendices were systematically examined probably 1 in 250 would prove to be cancerous. Only four instances of tuberculous disease of the appendix occurred in the 200 cases but the prognosis of this condition was unfavourable. The question of removing the appendix after an appendicular abscess had been evacuated should be decided in each case on its merits, but as a general rule that course should be adopted if the general and local conditions did not forbid it. The commonest disease of the appendix was ulceration of the mucosa with penetration of bacteria into the tissues of the mucosa and into the lymphatics and onwards through the hiatus muscularis into the peritoneum. The ulceration was associated with septic, muco-purulent, or fæcal contents and the latter with concretion in 23 out of 200 cases. Reference was made to two cases of mesenteric thrombosis in patients suffering from acute intestinal obstruction. Among the causes of recurrences of appendicular symptoms was the presence of enormous dilatation of the cæcum with fæces which could be readily treated by means of enemata and care in diet.

Mr. W. H. BATTLE referred to five cases in which there was a return of symptoms after an abscess had been evacuated with success. In all of these the appendices were removed later and showed marked pathological changes. In five other cases a secondary abscess formed, the appendix not having been removed at the first operation. Sinus formation occurred in six cases after a localised abscess had been opened and drained. In two other cases operation was performed for commencing peritonitis where there had been previous localised suppuration. The appendix had been removed in seven cases after an abscess had been evacuated and all inflammatory symptoms had subsided. In several of these cases concretions were found and in all these were evidences of pathological conditions which might give rise to further trouble. Similar conditions were found in the appendices removed after evacuation of the abscess into the lower part of the bowel. The appendix had been successfully extirpated in seven cases where localised suppuration was present but in one of these cases the patient had died from a cardiac seizure four days after the operation. The condition of the appendix was also described in several cases which had died from general peritonitis or from some other cause which was not fully explained by the post-mortem examination. In conclusion, early evacuation of an abscess and secondary removal of the appendix were advocated in the majority of cases and the removal of a concretion at the first operation was not considered an indication for believing that the patient would be free from recurrence of symptoms.

Mr. GEORGE R. TURNER preferred to operate on all acute cases as early as possible unless they were obviously recovering. In such cases the mortality was 10 in 125 and the majority of the fatal results were obtained in patients who were seen late in the attack. Operation during the quiescent stage produced a mortality of 0·5 per cent. in the combined statistics of five hospitals; in all other cases the combined statistics showed a death-rate of 23 per cent. A great reduction of fatal results would be produced by operating at an early period in the disease and at the same time complications and unfavourable sequelæ would also be much reduced in numbers. The method of opening the abdomen by separation of muscular fibres was justifiable in simple cases but was inadequate when pelvic complications had to be dealt with.

Mr. H. F. WATERHOUSE referred to the fact that although appendicitis was three times more common in the male than in the female sex complications were infinitely more frequent in women. The appendix should be removed flush with the cæcum and the absence of this precaution was responsible for recurrent trouble in some cases. Ventral hernia did not occur when the muscle fibres were separated and not incised—a method which gave room enough in all cases. The debate had emphasised the necessity for carefully examining the right ovary and tube at the time of operation. Pyonephrotic kidneys and ureteral calculi were possible sources of errors in diagnosis. Early operation was a very important factor in reducing the mortality of the disease and in 19 cases which had been operated on within 24 hours of the onset of symptoms there had been no deaths in spite of the fact that perforation had been present in three instances. The appendix should not be removed when evacuating an abscess.

Mr. J. P. LOCKHART MUMMERY emphasised the importance of care in the after-treatment of operation cases.

The discussion was then adjourned until the next ordinary meeting of the society.

OBSTETRICAL SOCIETY OF LONDON.

Chyluria complicating Pregnancy.—Pregnancy in a Rudimentary Uterine Cornu.—"Grape-like" Sarcoma of the Cervix Uteri.

A MEETING of this society was held on March 1st, Dr. W. R. DAKIN, the President, being in the chair.

Captain J. C. HOLDICH LEICESTER, I.M.S., read a short communication on a case of Chyluria in a Eurasian, 18 years of age. She had been married eight months and had advanced to the eighth month in pregnancy. She presented herself for treatment at the Eden Hospital for Women, Calcutta, on account of severe pain on micturition. The urine had become milky for the first time on the previous day. For five months she had had a swelling in the right thigh which had occasionally given rise to pain. The swelling felt like an enlarged gland in the femoral ring; it quickly subsided. On examining the urine drawn by catheter it was milky-white in colour with a faint pink tint and contained some white sediment; it had a specific gravity of 1022 and was faintly acid; the albumin amounted to one-quarter. Traces of blood and chyle were present. Phosphates were in excess. On microscopical examination, besides phosphates and oxalates and blood corpuscles, bladder epithelium and several filaria embryos were found. The urine was found to clot shortly after being passed but soon broke down again and remained fluid. Both the labour and the puerperium passed naturally except for a rise of temperature to 101·8° F. on the sixth day after delivery. The urine as a rule continued to preserve its milkiness. The blood was examined on three separate occasions and on each was found to be swarming with filaria embryos. The case resisted all treatment, whether of diet, drugs, or posture, and the condition of the urine remained practically the same throughout. The patient's general condition showed considerable improvement during the time she was in hospital. In Captain Leicester's opinion there was little doubt that in this case the pregnancy was the exciting cause of the chyluria, which was due to the disturbance of the pelvic lymphatics which had been previously affected by filarial obstruction of the thoracic duct.

Dr. A. H. N. LEWERS related a case of Pregnancy in a Rudimentary Uterine Cornu in which he had operated for severe internal hæmorrhage. The patient was 24 years of age and had been married 13 months. She had had a miscarriage at about the sixth month of pregnancy six months after marriage. One menstrual period had occurred 13 weeks after the miscarriage. On the day prior to her admission to the London Hospital she was suddenly taken ill with severe pain in the abdomen. Preparations were at once made for operation. The patient's condition was so bad that both rectal and intravenous saline injections and hypodermic injections of strychnine were resorted to. On opening the abdomen the ovum was discovered on the left side. The sac burst on handling and a fœtus of at least three months gestation escaped with the liquor amnii. The pedicle was found to be much thicker than in a tubal gestation; it was transfixed and tied a second time to render it secure. On subsequent examination the wall of the sac proved to consist of muscular tissue, about half an inch in thickness, formed by the rudimentary horn on the left side. It was noted that the left ovary did not contain the corpus luteum, from which Dr. Lewers inferred that external migration of the ovum from the opposite ovary had occurred. The patient passed a decidual cast eight days after the operation and made a good recovery.

Dr. HERBERT WILLIAMSON showed a specimen of "Grape-like" Sarcoma of the Cervix. He remarked upon the rarity of this form of sarcoma of the cervix, only 16 cases having been previously recorded. The specimen

(which was removed by operation from a woman 39 years of age) consisted of a firm central core to which were attached a number of branching processes. These processes here and there throughout their length were dilated into cyst-like bodies of the size of cherries. Microscopically the growth was a mixed-celled sarcoma; the cysts were covered on the surface by several layers of stratified squamous epithelium and their fluid contents appeared to have accumulated as the result of œdematous infiltration rather than of myxomatous degeneration of tissues.—Dr. M. HANDFIELD-JONES brought forward the history of a case in which sarcoma of the same type had been found springing from the whole lining membrane of the body of the womb. In his own experience the disease had shown very little evidence of malignancy and the patient's life had been prolonged for several years after the disease was first recognised.

The PRESIDENT delivered his inaugural address.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

The Etiology of Carcinoma.

A MEETING of this society was held on March 1st, Professor JOHN CHIENE, the President, being in the chair.

Dr. GEORGE THOMAS BEATSON (Glasgow) read a communication on the Etiology of Carcinoma. He said that recently various authors had strongly endorsed the view that in carcinoma they had to deal with a microbic disease. He referred chiefly to the researches of Professor Doyen of Paris and of Dr. W. Ford Robertson and Mr. Henry Wade of Edinburgh and stated that so far apparently as they went they did not fulfil the postulates laid down by Koch. There was yet wanting in connexion with them the crucial test of the reproduction of carcinoma in animals by means of the respective micro-organisms and this was almost an essential for the establishment of the position which these authors took up. If it were true that Professor Doyen's serum had a curative effect in carcinoma it formed a most convincing evidence in favour of his theory. He had been most impressed in the communications he had read on the effects produced by Doyen's serum by the absence of any evidence of changes in the cancer cells themselves. Great stress was laid on the mobility that it induced in the growth. This was what might be expected to result when the source of the serum was considered and the conditions which were usually present in cancerous growths. The presence of generally an extensive area of small cell infiltration was one of the most constant features of such growths. This infiltration was inflammatory in its nature and formed the factor that served in many instances to fix down the growth to the surrounding tissues. The presence of this condition was not considered by surgeons as a favourable condition for operation as it seemed to be associated with a tendency to recurrence. It was not unreasonable to hold that a serum made from microbic tissue (as Doyen's was) should have an effect on this inflammatory area as was seen in other instances of serum-therapy. This would allow of an operation being done which otherwise might be contra-indicated. If this were so such a serum would be of great value and its future rôle might be as an adjunct to operative treatment, being used as a preliminary to localise the tumour and to lessen the tendency to dissemination of the cell growth. Assuming that the parasitic theory of carcinoma had not yet been established Dr. Beatson was entitled to bring forward certain views that he had formed either as the result of experimental or clinical observations. The more he worked at carcinoma clinically the more he was inclined to regard it as a tissue vice and the more he leaned to the views which he had put before the society nine years ago and which he might designate as "*the germinal theory of cancer.*" He then stated that cancer consisted in the epithelium of the part affected taking on the active proliferation which was the marked characteristic of the germinal epithelium and that the special cells seen in sections of cancer (cancer bodies) would eventually be shown to be special ova or germinal cells. After alluding to the beneficial effects on mammary carcinoma induced by removal of the tubes and ovaries, the nature of the change consisting in a great increase in the stroma of the growth and a marked disappearance and fatty degeneration of the epithelial cells—an atrophic condition being induced, Dr. Beatson stated that it was on these grounds that he had based his germinal theory. To establish it on a scientific and trustworthy basis, however, they ought to find (1) nuclear protrusions (polar bodies) and (2) fewer chromosomes in the so-called germinal cells. In certain films from carcinomatous tissue made by Mr. Ernest G. Fortune there were appearances in certain of the cells containing the so-called parasite which indicated a body (stained green) either leaving or just entering the cells. In some cases it was surrounded by a distinct vacuole but it was not absolutely clear whether this was an extrusion or intrusion of a possible leucocyte and so no actual proof of the formation of polar bodies was established. Cancer cells which were dividing and undergoing mitosis showed a clearer appearance than the other, as if the process of division had some clarifying effect on the whole protoplasm of the cell. Mr. Fortune had also observed that while in the films made from cancer tissue cells could be found in all stages of karyokinesis, the cells containing the alleged parasite had never been seen dividing, though the cancer cells in their vicinity were doing so. Dr. Beatson drew attention to the work done by Professor J. B. Farmer, Mr. J. E. S. Moore, and Mr. C. E. Walker, in which they showed that the division of the nucleus of malignant cells very closely resembled that found in developing reproductive tissue. He drew attention to the marked *cellular* character of carcinoma, which was always regarded as made up of (*a*) epithelial cells and (*b*) connective tissue stroma. Its characteristic feature, however, was the disorderly distribution of its large, irregular, and polymorphic cells. The stroma was derived from the connective tissue spaces into which they were forced and they had no blood-vessels, nerves, or lymphatics of their own. Cancer cells simply lay in an intercellular fluid unpermeated by any newly formed blood-vessels. A cancerous tumour was composed of cells only, its stroma being a pre-existent element into which the cells had been forced by pressure. In such a tumour there was only a massing together of cells which had no tendency to develop into permanent tissue and so were entirely devoid of organisation. Cells so situated were of low vitality and were liable to decay, a characteristic which specially marked carcinomatous swellings (e.g., malignant ulcers). Another characteristic of the cancer cell lay in its *unirritating* nature. When cast off from the primary tumour and arrested in a distant part no local disturbance took place or constitutional derangement. Small local foci of dissemination in the lungs or the liver were often not revealed by any physical signs or symptoms. This had always seemed to Dr. Beatson a strong point in favour of the view that the carcinomatous cell was one which was the offspring of the body tissues and was in no way a stranger to them. Were this not so they ought to have in both primary and secondary tumours that disturbance of nutrition known as inflammation and this was generally observed in microbic or protozoal infections. The delay often found in seeking medical advice was frequently unavoidable. He was thoroughly opposed to the teaching that the general public should be instructed in the early symptoms and manifestations of carcinoma. The apprehensive frame of mind thus induced Dr. Beatson regarded as a powerful predisposing cause of the very condition which they wished to avoid. He alluded to the general good health which was so frequently associated with carcinomatous disease. The very pigmented condition of the fat in some of these cases had also attracted his attention. It presented a reddish-yellow (yelk of egg) appearance and had a colouring matter present which was not found in ordinary fat. This might also be associated with the lemon-tinged cachexia often seen in cancerous patients. He had also noticed while operating on cases of mammary cancer that the fat was in an oily and fluid condition and it was a general experience that in such cases carcinoma disseminated itself more rapidly than in those of spare build. As regards the source of the procreative fluid of the human body the ovaries and testes prepared certain modified epithelial cells (ova and spermatozoa), by the union of which the human embryo was produced. Maturation had first, however, to be accomplished and in the case of the ova and spermatozoa a series of cell divisions took place by which in each case there was a reduction of half the number of their chromosomes. In both these organs this process was accomplished by great cellular activity and the question arose, What was the stimulus which set it in motion so that in the ovum they had the polar bodies extruded and the reducing division in spermatozoa? It must be a secretion of

some kind and it might be elaborated by the testes and ovaries themselves or by all the tissues of the body. In the latter case the testes and ovaries were merely instrumental in elaborating the work done by the rest of the body. The fluid portion of the seminal fluid, largely produced by the seminal vesicles, prostate, and Cowper's glands, was not only essential to the motility of the spermatozoa but also to their fertilising power. Again, removal of tubes and ovaries led to an increased deposit of fat in the body as if some secretion were being stored up and was no longer being removed from the tissues (as mucin accumulates in myxœdema). If this theory were correct there was a secretion which had to be reckoned with which not only bestowed vigour on the tissues themselves and which might even in certain circumstances confer on them a proliferating power but which seemed to have a special affinity for one particular tissue—viz., the fat. In this latter it might be retained and kept as a reserve, as when functional activity on the part of the ovaries and testes did not utilise it. It was generally stated that a tumour in the human body performed no physiological function and in carcinoma the cells had been likened to an invading host advancing to the conquest and eventual destruction of every tissue in the body. The more, however, that Dr. Beatson had thought over the subject the more he felt that the so-called autonomous proliferation of cells was a mere assumption and that possibly carcinomata were doing work for the organism by eliminating or dealing with some body product. If so this would bring them into line with the other body cells and presented them not as rebels but as taking up some new work or as performing the duties of other cells no longer functionally active. Could any ground for such a view be shown? The tumours in the shape of rounded bulbs or nodules in the roots of healthy bean and clover plants bore, Dr. Beatson thought, on the work of Dr. Robertson and Mr. Wade. These growths varied in size from a small pin-head up to a fair-sized potato and occurred on the healthiest plants. These nodules were packed with nitrifying organisms which absorbed nitrogen from the air and supplied their hosts, the plants, with the only food they required. The healthier the plant was the greater was the number of these nodules. Dr. George Moore of Washington grew these bacteria and packets of them were now made up and sold commercially to inoculate the ground. The result is that crops on soil so treated have increased a hundredfold, thus making the barren places to rejoice. Paget long ago drew attention to the nodosities and nest-like growths on trees and such would become doubly interesting if it were shown that possibly they were doing work of a beneficent kind. To assume that some kind of physiological work might underlie tumour growth in man was not, Dr. Beatson thought, unreasonable. In the case of carcinomata he thought there were indications that this was so and this seemed to be confirmed by Farmer, Moore, and Walker, who found that there existed in malignant growths special cells which were characterised by a reduced number of chromosomes and which had their prototype in the reproductive cells of the body. Thus in functional inactivity or diseases of the testis or the ovary the part affected by the carcinoma did vicariously their work or helped them in an excess of work thrown upon them. If the procreative fluid were elaborated in the body tissues the possibility of this interchange was not unreasonable. The absence of organisation in the crowds of cancer cells of the tumour would suggest that they were *cast-off cells* which, were they not shut in by the tissues, would escape, as did those in the testes by the vasa deferentia. There were enacted in the tissues of the tumour the same cell activity and proliferation which went on in the testis and the ovary. Some of the neoplasms were glandular in character. Another point which had some bearing on the question of cancer as a secreting organ lay in the effects of operations for carcinoma. It was a very general experience that after removal of the tumour patients often put on flesh; cachectic signs might disappear. This was not easily explained unless the removal of the carcinoma had put a stop to something which was draining the tissues and markedly modifying them. Did the putting on of fat point to the fatty tissue of the body again taking on storage property to deal with a secretion which was no longer being used up by the carcinoma? If this were so, and Dr. Beatson inclined to the view, then the fat of the body bore some relation to carcinoma both previously to the onset of that disease and after its successful removal by operation. Under both conditions it had a salutary influence and it might be that only when its storage power was weak the more specially developed though degenerate cells of any body organ or tissue might draw upon the body secretion that the fat contained and by dealing with it in a different way manufactured it into an epithelial secretion on the lines of the normal reproductive tissue of the body. The beneficial results of oöphorectomy might result not only from a lessening in the amount of Dr. Beatson's suggested body secretion but also by adding to the capacity for fat development. In conclusion, Dr. Beatson said that the germinal theory of carcinoma harmonised most with the facts and course of the disease though it assumed the existence of a general tissue secretion. In the event of the testis or the ovary being unable to deal with this procreative fluid through decay or disease, and the fat of the body having no special capacity for storing it, it was probable that tissues or organs which had retrograded physiologically might take upon themselves the function of secreting it. If this were correct then in carcinoma they had a tissue secretion to deal with in relation to which the fat of the body probably acted as a middleman. This being so Dr. Beatson thought they should not take too pessimistic a view of the therapeutic position in connexion with the disease or despair altogether of its successful treatment.

In the discussion which followed Mr. HAROLD J. STILES said that they ought to look at carcinoma from the widest and from the most fundamental points of view and this was what Dr. Beatson had done, and his propositions were deserving of the most careful consideration. The starting point of a carcinoma was in the epithelial cell. The essence of the condition was the atypical uncontrolled proliferation of cells. In opposition to what had been said he affirmed that these cells did cause inflammatory proliferation and so fibrous tissue was produced. In a carcinomatous lymphatic gland distinct diapedesis from venules could be observed. What originated the starting process? This ought not to be studied in the mamma but in an exposed epithelium—e.g., ulcer of the tongue, or in the conversion of a chronic ulcer of the leg into a carcinomatous one. In such there was a proliferation of epithelium and this got into new surroundings. In the case of the ulcer the epithelium endeavoured to cross over and to cover the granulations, while at the same time there was a proliferation downwards at the edges of the ulcer and ultimately the deeper layers took on a deeper growth and thus a lymphatic infection ensued. Mr Stiles did not think that the testes or the ovaries had any part to play in the production of carcinoma, for this disease was found in every kind of individual, thin or fat, healthy or weakly. If malignant cells were decendants of epithelial cells they did not know what converted them into germinal cells and he doubted if they ever would find this out. The glandular appearance seen in certain cases of mammary carcinoma was simply due to the fact that epithelial cells endeavoured to perform their normal function. This could be best studied in those conditions which were on the border line between inflammatory breast tumours and real carcinoma. The most interesting condition was Paget's disease; here one found the malignant cell isolated in the midst of perfectly healthy epidermis. It looked very like the ova. Each proliferated and formed a cluster in the deeper layers of the epidermis. Where had they come from? If a section were made of the mammary duct as it passed through the nipple the same cells could be found in it.

The PRESIDENT said that in every gland there were two functions, (1) an evident and (2) a hidden one. This might also be true of every cell in the body. The essence of every malignant tumour was an excessive local reproduction. The migration was due entirely to want of food and the large cells in Paget's disease were migratory. Did the tumour arise because of an excessive amount of the maternal or of the paternal element? Under normal conditions there was a healthy balance between these and an unequal balance where the tumour grew, or, in other words, a maternal plus. If by removing the ovaries this maternal plus were removed then they might still hope for improvement in oöphorectomy, even when the woman was past ovulation.

Dr. WILLIAM RUSSELL remarked that Dr. Beatson's argument was based upon observations showing that removal of the ovaries was useful in cases of mammary cancer. One had to remember, however, the close sympathetic relation between the pelvic organs and the mammæ in women. It

was not claimed that this operation was equally useful in carcinoma of other parts and so he did not quite follow the drift of the argument. In the removal of the testes for enlargement of the prostate and of the ovaries in myomata the atrophic influences induced had to be remembered. The blood serum was the expression of the secretion from all cells in the body, so the serum must be modified by the removal of any important gland. This had been abundantly proved in the work on bacteriolysis, hæmolysis, and especially cytolysis. In the case of epithelioma of the lip the germinal view was that certain germ cells in the epithelium multiplied and so formed the tumour. Even if it were true that epithelioma of the lip began in two or three cells the mass of epithelioma took on a general proliferation and this process extended to adjoining columns of epithelium. He could not believe that any maternal plus process could cause this. It was very distinctly an infective process. This was further shown by the occurrence of metastases. A cell was carried by the blood or lymph stream and was arrested in some organ. In spite of all the protective properties of the cells around it the cell which ought to have been destroyed proceeded to multiply and not only so but cells in the new organ sometimes became cancerous. A malignant nodule on the surface of any abdominal organ, if it broke down and the débris escaped into the abdominal cavity, caused a general infection of the whole peritoneum. Dr. Russell hoped that before long it would be shown that carcinoma is caused by an external parasite which gains entrance and stimulates cellular reproduction.

Professor A. R. SIMPSON, Dr. P. MACBRIDE, Dr. W. TAYLOR, and Dr. JAMES RITCHIE also took part in the discussion and Dr. BEATSON replied.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF SURGERY.

A New Plaster Apparatus for Fractured Femur.—Fracture of the Tibia.—Excision of Joints.

A MEETING of this section was held on Feb. 24th, Mr. E. H. BENNETT being in the chair.

Dr. W. I. DE COURCY WHEELER exhibited an Apparatus designed by himself to facilitate the application of plaster of Paris to fractures of the femur either as a primary dressing or at any period before union had taken place. It consisted essentially of two gates swung on an upright iron bar on which rested a padded crutch to receive the perineum. The machine was so arranged that accurate extension could be kept up during the entire operation of encasing the leg and the pelvis in plaster. At the same time (extension being applied by means of a clove hitch attached to the ankles and rollers surmounting the end of the gates) abduction and adduction could be made relatively equal and the errors arising from obliquity of the pelvis could be avoided. The amount of extension put on could also be estimated by two Salter's balances which intervened between the rollers at the end of the moveable gates and the clove hitch attached to the legs of the patient. Five or six cases had been treated on the apparatus with success. The ideal fractures were those near the middle of the shaft. Extension was put on until both legs were the same measured length, no errors being likely if the gates were open to the same extent; this latter measurement could be read off a graduated bar provided for the purpose. The plaster was rapidly rolled on and very free access to the limbs was obtained. Only one assistant was necessary. Special provision was made for the surrounding of the pelvis with the roller bandage and this could be done without any hoisting of the patient from the table by a simple manipulation of the apparatus. The apparatus was very simple, could be made by any ironmonger, and cost about £2. In suitable cases the injured limb was encased with the pelvis and also the sound limb as far as the knee-joint, leaving a strong wedge of plaster in the perineum. The patient was allowed to move about on crutches in a few days and frequently no shortening resulted.—Mr. BENNETT expressed the opinion that the apparatus was probably useful in general hospital work but could hardly be used by country practitioners.—Mr. R. F. TOBIN said that Mr. Wheeler's method would be useful in the treatment of fractures of the femur in field service.

Mr. BENNETT read a paper on Oblique Fracture of the Tibia. He said that fracture of the tibial shaft alone was rare as a result of indirect violence, although common enough when the violence acted on the bone directly. Oblique fractures of the central portion of the shaft without accompanying fractures of the fibula were rare. In a case which recently came under his notice the patient, a girl, aged 15 years, jumped from a height of about 12 feet on to the ground and immediately fell backwards. Although she was able to stand up she could not put any weight on the injured limb or attempt to walk. On being taken to hospital soon afterwards she was found to be suffering from pain and complained of loss of power in the limb but it was not possible to obtain crepitus or to detect any evidence of abnormal motion in the limb. An x ray examination, however, revealed the presence of a fracture. It was very oblique, traversing almost four inches of the shaft of the tibia in its middle segment. Its direction was from above, and without downwards and inwards. The progress of the case was uneventful and union was perfect in the ordinary time. The absence of deformity was explained by the integrity of the fibula. The skiagrams obtained from this case afforded the only example which he had seen of oblique fracture of the shaft of the tibia only from indirect force.—Dr. W. S. HAUGHTON said that in studying the long bones stereoscopically it was found that the oblique direction of the lamellæ was the rule and not the exception and that when fractures were regarded from the anatomical standpoint it could be seen that their planes ran parallel to the direction of these bone lamellæ.—The communication was also discussed by Mr. TOBIN, Mr. EDWARD H. TAYLOR, and Mr. G. JAMESON JOHNSTON.

Mr. KENNEDY read a paper on Some Cases of Joint Excision. One case of excision of the knee was remarkable as the joint was riddled with sinuses and had been fixed at a right angle for years; the patient also showed symptoms of well-marked pulmonary tuberculosis, a cavity being present in one lung. Nevertheless recovery quickly followed operation, the lung healed rapidly, and the patient was enabled to get about. In connexion with this case Mr. Kennedy dwelt on the importance of fixing the bones together after excision of the knee by Tobin's clamps or by suturing. A case of excision of the shoulder and one of excision of the elbow were quoted as examples of dry caries of the articular ends of bones. Although in each the disease had existed for years not a trace of suppuration was present in either. The diagnosis was difficult and was made clearer by skiagraphy.—Dr. HAUGHTON said that stereoscopy was of great value in diagnosing early tuberculosis of joints by means of the x rays. By its aid areas of rarefaction could be discerned and their true relations to each other and to the joint made out.

Mr. JOHNSTON exhibited a patient who had the power of voluntarily producing a partial dislocation of the knee.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.—A meeting of this society was held in the medical school, Sheffield, on Feb. 17th, Dr. D. Lloyd Roberts, the President, being in the chair.—Dr. S. Buckley showed an example of Multiple Parovarian Cystic Disease together with Uterine Fibroid. The fibroid was enucleated and both appendages were removed as there was in close relationship to each ovary a cluster of small cysts of parovarian origin.—Mr. R. Favell showed a Dermoid of the Ovary as large as a seven months uterus which contained a well-developed mammary gland with a nipple as well as teeth and hair.—Dr. Sinclair White showed a similar specimen from a girl, aged 13 years, which was generally adherent and had a doubly twisted pedicle but had caused no symptoms.—Dr. Donald had removed an ovarian dermoid from a patient, aged 71 years.—Dr. A. Wallace showed three Uteri removed from patients, aged 50, 51, and 53 years, on account of hæmorrhage. Two were examples of cancer of the body, while the other had within the uterine wall a thickening layer composed of fibrous trabeculæ enmeshing muscular tissue. This uterus three weeks before operation was so large as to reach to the umbilicus. It was much less at the operation and was removed vaginally by means of vaginal incisions. Schuchardt's paravaginal incision was used in one of the other cases, while the abdominal route was chosen in one where the vagina was very narrow. Dr. Wallace had seen marked suppuration in Schuchardt's incision in several cases and had observed

rapid recurrence of cancer in the scar.—These observations were confirmed by subsequent speakers.—Dr. Buckley mentioned a case in which it was impossible to decide between Hæmatosalpinx and Ectopic Pregnancy. The history pointed to the latter. The specimen was a thick-walled unruptured cyst of the outer part of one tube lined by granulation tissue and containing blood clot. Microscopic examination failed to reveal the presence of any chorionic structure.—Dr. Donald reported the case of a patient on whom he operated for the relief of pain and hæmorrhage. A single soft fibromyoma of considerable size was enucleated from the left side of the uterus and left broad ligament. Two years later the patient became pregnant and was spontaneously delivered at term of a healthy child.—Dr. Donald also showed a Hard Fibroid Tumour of the Uterus from the fundus of which a soft vascular red fan-shaped growth was springing. This was a spindle-celled sarcoma. The fibroid had been present for two years, the sarcomatous outgrowth having recently caused pain and rapid enlargement.—Dr. Favell mentioned the case of a woman who had two fibroid tumours of large size in the lower uterine segment. She became pregnant and at the sixth month was very ill through pressure symptoms, jaundice, and albuminuria. The position of the fibroids excluded every measure short of hysterectomy. This was accordingly done, after which the symptoms rapidly disappeared.—Dr. J. E. Gemmell mentioned two cases of Primary Sarcoma of the Ovary in girls, aged 17 and 20 years. These were remarkable for their rapid growth and extremely rapid recurrence in the form of soft generalised sarcoma of the omentum and the mesentery.

WINDSOR AND DISTRICT MEDICAL SOCIETY.—A meeting of this society was held on Feb. 22nd, Mr. W. B. Holderness, the President, being in the chair.—Mr. A. A. Bowlby, in introducing a discussion upon the subject of Appendicitis, said that cases might be divided into five main classes—namely, (1) obstruction of the lumen of the appendix from stricture, fæces, or bands; (2) inflammation without suppuration; (3) inflammation with abscess; (4) sloughing and peritonitis with suppuration; and (5) chronic cases with no acute attack. The cases under the first heading were transient and acute, the symptoms being often those of stomach disturbance, such as dyspepsia. They were common in children. Those in the second class usually had an acute onset and were often preceded by nausea and abdominal discomfort. The pain was often all over the abdomen or more in the epigastrium. When general abdominal pain had subsided a lump was often to be felt and might remain long after the pain had gone. In the third class the onset was as in the second but often more severe. Occasionally a rigor was present. The pain and fever might persist after three days or the fever might subside and rise again on the fifth, sixth, or seventh day. The swelling was generally felt after the third or fourth day, perhaps only per rectum. In the fourth class there was often a definite shock with the sudden onset. There was a low temperature with a rapid pulse which soon tended to become feeble. The pain was very acute at first but might decrease as the patient became more ill. Mr. Bowlby next detailed the treatment that he was in the habit of adopting in this disease. In all cases of sudden onset of pain apparently due to the appendix he would give morphine. No food should be given by the mouth, the patient being fed with enemata. He would continue the treatment by morphine and strychnine and apply fomentations locally. If the case belonged to Classes 1 or 2 the symptoms generally quickly improved and an operation for removal of the appendix might be undertaken in about three weeks or after a longer interval if the attack were more severe. He would avoid operation in the acute stage. In Class 3 as soon as the pus was localised he would open the abscess but would not search for the appendix. In these cases, however, he would still avoid early interference. In Class 4 he would operate at once and remove the appendix at the same time.—The discussion was continued by the President, Mr. J. W. Gooch, Mr. E. W. Adams, Dr. E. S. Norris, Mr. W. H. Beresford, Mr. J. O. Skevington, Dr. Wood, Dr. W. Wrangham, Dr. W. A. Ellison, and Dr. C. R. Elgood.

BURNLEY AND DISTRICT MEDICO-ETHICAL ASSOCIATION.—A meeting of this society was held on March 2nd, Dr. A. M. Sinclair being in the chair.—Dr. Thomas Snowball read a paper on Myopia in which he discussed various causes of the condition, including among others the performance of close eye work with defective illumination and stooping at eye work which tended to prevent the free return of venous blood. Myopia usually began in early school life and gradually increased. Bondi made an examination of 2000 school children and found that in the board schools (Volkschule) 4 per cent. were myopic, in the secondary schools (Bürgerschule) 12 per cent., and in the Obergymnasien 27 per cent. Mr. C. H. Usher of Aberdeen, in an examination of the students at the University of Aberdeen, found that 15 per cent. were myopic and that the town-bred myopes were to the country-bred myopes in the proportion of 7 to 5. In the Report of the Royal Commission on School Training (Scotland) it was stated that girls were more myopic than boys and that the degrees of myopia increased with age up to 15 years. Dr. Snowball eventually discussed the formation of the myopic crescent and true posterior staphyloma, defective light sense, diminished field of vision, and the causes for defective central vision, especially that occurring in myopes between 40 and 50 years of age. He said that the complications of myopia included the black spot, the formation of cataract, opacities of the vitreous, displacement of the lens, thinning of the cornea, increase of intra-ocular pressure, and (most serious of all) detachment of the retina. He related instances of hereditary myopia which had occurred in his own experience and spoke of Head's observations with regard to local and referred pain in ordinary and progressive myopia. There were two kinds of treatment—one by glasses and one by operation. In prescribing glasses some adopted partial correction and some preferred full correction. Mr. Ernest Clarke recommended full correction and in cases of progressive myopia removal of the patient from school to open-air life in the country. Other preventive measures must be attended to, such as holding work well away from the eyes, avoidance of stooping, good illumination, and writing in an up-and-down style, and persons showing changes in the fundus should be cautioned against lifting heavy weights. Operative treatment consisted in removal of the lens either by repeated needling, preliminary needling followed by curette extraction, or curette extraction at once. The other eye must be useful or operation was contra-indicated.—Dr. H. Edmondson corroborated Dr. Snowball's remarks about heredity in myopia and gave examples of it in several successive generations of cotton-weavers. He advocated the discission operation, as from his own cases and from cases about which he had inquired he found that over 50 per cent. were highly benefited.—Dr. J. S. Wilson and Dr. G. S. Pullon also took part in the discussion.

CHELSEA CLINICAL SOCIETY.—A meeting of this society was held on Feb. 21st, Dr. T. Vincent Dickinson, the President, being in the chair.—Mr. J. Foster Palmer read a paper entitled "Pre-appendicectomy Appendicitis, its Bearing on Causation and Treatment." Referring to the largely increased number of cases of appendicitis occurring during the last few years he pointed out that in the "forties," "fifties," and "sixties," which might be called the pre-appendicectomy period, the diagnosis was usually made in the post-mortem room. Many of these cases, therefore, would have been saved by modern treatment. In addition to the fatal cases the nature of which was thus discovered there must have been a number of others in which no diagnosis was made, besides a large proportion of milder cases which recovered. Taking, therefore, the number of recorded fatal cases as a kind of basis on which to form an approximate estimate of the total number of cases it would appear that about the end of the "fifties" and the beginning of the "sixties" there must have been a large accession of cases of appendicitis of a somewhat similar character to the increase which had taken place during the last few years. The inference drawn was that the prevalence of the disease was not to be accounted for entirely by mechanical causes but that certain cyclical or quasi-epidemic influences might be at work which they did not at present fully understand. With regard to treatment it was only necessary to compare the post-mortem records of this earlier period with the results attained by modern surgery to be convinced of the great saving of life which had been brought about by their present methods.—Mr. C. Edward Wallis read a paper on Dental Caries, with lantern slides illustrating the pathological changes that took place. He expressed the opinion that to improve the teeth of the future generations it would not only be necessary to improve the diet and the hygiene of the child's life but also to make certain that the mother during the period of

pregnancy included in her dietary such calcium and other salts as would enable the teeth of her offspring to be properly calcified. Besides this, investigations had shown that breast-fed children possessed far better dentitions than those brought up on cow's milk and its many derivatives.

MIDLAND MEDICAL SOCIETY.—A meeting of this society was held at Birmingham on March 1st, Dr. E. W. Wood White, the President, being in the chair.—Dr. J. W. Russell showed a man, aged 29 years, suffering from Acromegaly.—Mr. L. P. Gamgee showed a man, aged 45 years, the subject of Adiposis Dolorosa. The disease had been in existence for five years and the patient had symmetrical masses of fatty tissue at the back of the neck, a mass in the right axilla, and a large one in the subcutaneous tissue of the abdominal wall. The tumours were softer and of less definite outline than ordinary lipomata, while those in the axilla and the abdominal wall were very tender on pressure. One of the tumours on the back of the neck was the seat of severe neuralgic pain. There was no abnormal pigmentation of the skin over the tumours and there had not been any subcutaneous hæmorrhages. The patient had for many years been a confirmed alcoholic. Attention was called to the fact that this disease very rarely occurred in males.—Dr. J. Jameson Evans showed an Eye which contained a Melanotic Sarcoma which had perforated the sclerotic near the corneal limbus. Before the eye was removed the large extra-ocular mass projected between the eyelids on to the patient's cheek. The following were the points of interest in the case: 1. The growth had arisen in an eye the sight of which had been destroyed by an injury from a piece of steel three years previously. 2. The symptoms before the growth perforated the globe were comparatively mild but its growth afterwards was exceedingly rapid. There was never any increased tension but there were a cystoid cicatrix at the site of subsequent perforation and some ciliary injection. According to the patient's statement the extra-ocular growth had only existed for three weeks. 3. The patient now (ten months after excision) was suffering from metastatic growths in the lung, liver, and in the skin of the face, chest, abdomen, and extremities. Dr. H. E. Utting of Walsall records that the number of growths on the surface exceeds 200.—Mr. J. W. Taylor read a paper on the Value of Colpotomy in the Thrombotic Form of Puerperal Fever (early thrombotic pyæmia).

ROCHDALE AND DISTRICT MEDICAL SOCIETY.—A meeting of this society was held on March 2nd.—Dr. W. Hirst Bateman opened a discussion on Puerperal Pyrexia from the point of view of immediate treatment. It was important to decide (1) that the rise of temperature was connected with the puerperal condition and (2) to distinguish between sapræmia and septicæmia. Treatment should be (1) a calomel purge; (2) if the temperature did not fall within a few hours the uterus should be douched with perchloride of mercury; (3) a mixture of quinine and ergot should be given; (4) if the temperature remained high after two or three douches the uterus should be curetted, douched, and packed with iodoform gauze, the packing to be removed in five or six hours; and (5) antistreptococcic serum might be used.—Dr. S. B. Brentnall drew attention to the value of polyvalent serum.—Mr. G. W. Malim emphasised the importance of distinguishing between sapræmia and septicæmia. He doubted the advisability of curetting except in cases where there was retained membrane. Douching should be avoided altogether in real septicæmia.—Dr. W. E. Jameson spoke of the value of antistreptococcic serum.—Mr. S. T. Lord, Dr. J. Melvin, Mr. H. H. I. Hitchon, Mr. W. Pooley, Dr. J. G. Standing, and Dr. H. Harris also took part in the discussion.—Dr. Bateman showed a case of Acromegaly presenting the characteristic features. The feet were not markedly enlarged. There was complete atrophy of the left optic nerve and the right showed neuritis with temporal hemianopsia.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held at the Royal West Kent Dispensary on March 3rd.—Dr. W. E. Pountney was elected an ordinary member of the society.—Dr. F. S. Toogood showed the following clinical cases: (1) Gout; (2) Tuberculous Wrist-joint; (3) Tuberculous Abscess of the Head; and (4) Phthisis.—Dr. R. D. Muir showed a case of Herpetiform Morphœa and a case of Multiple Fibroma.—Dr. R. E. Scholefield showed a case of Myxœdema and a case of Senile Chorea.—The cases were discussed by the members present.

Reviews and Notices of Books.

Museums, their History and Use. By DAVID MURRAY, LL.D., F.S.A. Glasgow: James MacLehose and Sons. 1904. In three Volumes. Total pages 1043. Price 32s. net.

VOLUMES II. and III. of this intersting work are composed of catalogues and bibliography, subjects which, although eminently important and useful, do not lend themselves to review. But Vol. I. comprises a history of museums that sets forth the ideas of a scholar and antiquary and a museum expert upon the right use of museums and these ideas merit the serious consideration of all those interested in education, whether as teachers, ratepayers, or philanthropists. Dr. Murray gives a delightful account of the very early museums, using the term to mean a collection of rarities. Passing over the ark and the collection of curiosities which, according to some authors, King Solomon had got together, he reminds us that in the Middle Ages the churches were the great storehouses of curiosities. Excluding relics, a common object to be seen in churches was an ostrich egg. These eggs may be seen any day at the present time in sundry Eastern churches and occasionally in those of the West. Durandus gave various mystical reasons for their presence but the most probable explanation is that they were regarded as a symbol of life. Their use was common in all branches of the church and almost universal in Mohammadan mosques. But from the very beginnings of "religion" the egg was regarded as a symbol of life and even in these days the Pace egg—i.e., the Easter egg—is still in use.

Dr. Murray says that the griffin's eggs, of which there were several in Durham Abbey, are believed to have been ostrich eggs. We can hardly agree with this theory for the ostrich egg was well known in mediæval times. Raine in his "St. Cuthbert" (Durham, 1828) gives a list of the treasures which were in Durham Abbey in 1383, and among them were nine griffin's eggs. He also suggests that they might have been ostrich eggs. One is said to have been ornamented and cut in two. Now Lethaby in his "Architecture, Mysticism, and Myth" points out that in at least one instance the griffin's egg is described as being hairy, of a brown colour, having a hard white and clear yelk. Nowadays we call them cocoa nuts. Carved ostrich eggs are fairly common but carved cocoa nuts are much more so and such nuts, whether carved or not, may well have filtered into England by way of Venice. Anyone who looks at Ruskin's drawing of the Lombard Griffin will see at once that it would lay an egg much more like a cocoa nut than that of an ostrich.

Other chapters of Dr. Murray's work treat of the Progress of Science, of the Beginnings of the British Museum, of Scottish Collectors and Museums, and of the Non-Scientific Character of Early Museums. Finally he ends with an admirable chapter on the Use of Museums. This chapter, as we have already said, merits the attention of all who are interested in education. Dr. Murray shows how valuable a well-arranged museum can be if used by a sensible teacher; a museum, he says, quoting Schelhammer, is a *bibliotheca sine libris* and it is just as important to provide objects for study as to provide books which tell about them. He has a poor opinion as to the use which is made of rate-supported libraries. On the other hand, he is rightly not satisfied with the way in which our museums are utilised. "Many of our museums do nothing but exhibit specimens; they make no provision for research and give no encouragement to systematic study. Our municipalities receive large sums of money from the State for educational purposes, but no municipality, so far as I am aware, has devoted any part of its funds for utilising its museums and publishing the results of research." Here

we must take leave of what is certainly a most interesting work, one moreover which should, if its precepts are taken to heart, be of great use both to those who have money to give and to those to whom is intrusted the spending thereof.

Progressive Medicine. Edited by HOBART AMORY HARE, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia; Physician to the Jefferson Medical College Hospital; assisted by H. R. M. LANDIS, M.D., Assistant Physician to the Medical Dispensary of the Jefferson Medical College Hospital. Vols. I. and II. 1904. Vol. I., pp. 337; Vol. II., pp. 334. Price 12*s.* each volume.

THE first contribution in Vol. I. is by Dr. C. N. Frazier. It gives a *résumé* of the progress recently made in the surgery of the head, the neck, and the thorax. Particularly interesting is the section on wounds of the heart. In *Progressive Medicine* for March, 1903, a table was published containing particulars of 39 cases of operations for closure of wounds of the heart. Since that time Dr. Frazier has been able to collect 21 cases, bringing the total number of recorded cases to 60. Of these 35, or 58 per cent., proved fatal and 25, or 42 per cent., recovered after operation. The absolute indications for operation after punctured wounds appear to be severe primary hæmorrhage and oppression of the heart's action from the accumulation of blood within the pericardium. In the case of gunshot wounds an expectant treatment should be carried out, inasmuch as many cases are known to have recovered spontaneously.

Under the heading of "Infectious Diseases, including Acute Rheumatism, Croupous Pneumonia, and Influenza," Dr. R. B. Preble reviews the work that has been accomplished by various observers in regard to diseases which have a bacterial origin. He considers that the questions most vigorously studied have been the unity or duality of human and bovine tuberculosis, the relation of cholera nostras and of sporadic dysentery to the Shiga-Flexner bacillus, and the nature and the frequency of paratyphoid infection. With regard to the last-named affection he regards it as being of the nature of a general infection. So far only three deaths have been recorded. In these cases on examining the intestines the Peyer's patches and the solitary follicles were found to be normal; but inasmuch as five cases of paratyphoid fever have been recorded in which intestinal hæmorrhage occurred it is probable that in some cases at least intestinal lesions exist. The fatal cases were all due to the "beta paratyphoid" bacillus. These pathological findings suggest that some of the reported cases of typhoid fever without intestinal lesions were really instances of paratyphoid instead of true typhoid infection. In relation to this subject we may draw the attention of our readers to a paper read before the Royal Academy of Medicine in Ireland by Dr. A. R. Parsons on Jan. 20th and reported in our columns on Feb. 18th, p. 430.

Dr. F. M. Crandall is responsible for the article on the Diseases of Children. He gives some interesting statistics bearing on the mortality of early life. After a careful consideration of the circumstances affecting infant life which obtain in various countries he quotes the opinion of Dr. Freeman who has made a special study of the subject in the United States. Dr. Freeman's conclusions are that the infant mortality of all countries is exceedingly high and this is shown to be unnecessary by the fact that infants who are well cared for show a very low mortality. The influences that contribute to the high mortality he believes to be defective feeding, "with heat, humidity, and bad surroundings as contributory causes." He states that there has been a marked decline in infant mortality during the past ten years in the United States, and especially in New York city, due for the most part to the decline in mortality from summer diarrhœa. He believes that the most important agency in reducing this mortality is the general adoption of pasteurising and sterilising milk for infant feeding. This method has been tried with success in some cities in this country.

In Vol. II. one of the most interesting communications is that by Dr. Alfred Stengel on Diseases of the Blood, Diathetic and Metabolic Diseases, and Diseases of the Spleen, Thyroid Gland, and Lymphatic System. An exhaustive account is given of Professor Bloch's views on pernicious anæmia. This observer insists that the term "progressive pernicious anæmia" fails properly to distinguish the disease from secondary anæmias which may run a pernicious course and suggests the name of "Biermer's progressive anæmia," under which are to be included only those cases the clinical course of which coincides with the features laid down by Professor Biermer. One of the most popular theories of the causation of pernicious anæmia is that it is due to a toxin formed within the intestinal tract, absorption of which brings about the hæmolysis believed to be the direct cause of the anæmia. Professor Bloch does not accept this view and offers the suggestion that "Biermer's progressive anæmia" is not an essential disease of the blood but can be traced to a primary asthenic composition of the blood-forming tissues. Further investigation is necessary before Professor Bloch's views can be accepted. We trust that the term "Biermer's progressive anæmia" will not be adopted. The association of an observer's name with a disease is, in our opinion, undesirable from several points of view. A name indicative of the pathological nature of the disease and the organ or the tissue of the body which it affects is more exact and more scientific.

These two volumes form a valuable addition to those that have preceded them.

Ex-Cathedrâ Essays on Insanity. By T. CLAYE SHAW, M.D. Lond., F.R.C.P. Lond. London: Adlard and Son. 1904. Pp. 250. Price 5*s.* net.

THESE *obiter dicta* deal mainly with subjects of a speculative kind and do not readily lend themselves to criticism. The following are amongst the topics dwelt upon: the nature of insanity, the symptoms of insanity, psychology and nervous diseases, surgery and insanity, and the treatment of insanity. The essay on the Nature of Insanity points out that that term means want of conformity with an artificial scale or standard which exists for each social level, there being no absolute universal standard. The author considers that there are numbers of persons in asylums who are much less affected mentally than are many in the outside world, who are lunatics by law alone, who ought to be restored to liberty but for the fact that they are unable to earn their own living and that the law is elastic. This view is somewhat disconcerting and likely to be misunderstood. That these persons cannot get their living argues that they are not *compos mentis*. Some such could, no doubt, be allowed out (boarded out) under guardianship. The mentally affected whom Dr. Shaw describes as at large at any rate mostly earn their living, do not run counter to the law, and are not under any social ban. The inmates of asylums who appear whilst there to be but little affected mentally have frequently an unpleasant way of showing their insanity when asylum control is removed. Referring to the germ theory of insanity, Dr. Shaw states that this must be admitted to be partially true and we agree that no more than this can at present be said. The author states his belief that in the insane the mucous membrane of the digestive tract undergoes ulceration as a result of trophic change. If this is a reference, as we presume, to the condition formerly known as ulcerative colitis but how commonly called asylum dysentery, we can only say that no valid evidence for such a belief is forthcoming. While it is open to

anyone to speculate upon the trophic condition of the part affected it is incumbent upon all to recognise the rôle of the micro-organism in the production of these ulcerated conditions.

The author has some interesting remarks upon psycho-physics and their value, to which space does not allow us to refer. Referring to the subject of consciousness he mentions telepathy and second sight, and considers it ridiculous to deny that there are forms of matter visible and tangible to some few in view of existing well-authenticated instances. A chapter is devoted to the discussion of the symptoms of insanity; it is pointed out that undue prominence is given to mere forms of insanity (mania, melancholia, and so on) in text-books; these are "merely states of the same thing" with different degrees of reduction; the terms are convenient but connote nothing as regards causation, prognosis, and treatment. Dealing with the association between ideas and emotional states it is pointed out that in the insane ideas (delusions) frequently have not the emotional tone which normally they should have; thus persons expecting to be hanged show no fear and "emperors" will scrub the floor without sense of incongruity. Interesting speculation follows as to instances of the same separation of idea and emotional content in the sane. Reference is made to destructive acts, to the frequent commission of the suicidal act without consciousness, "and it is only when the brain is relieved from congestion (as in cut-throats and drowning attempts) that consciousness of the condition returns." This vascular interpretation of the rise and subsidence of impulsive states is hypothetical and dubious. In a chapter on Surgery and Insanity there is some highly speculative writing as to possible relationships between delusions and altered conditions and actions of groups of cells which, even if it is helpful, seems without any basis. Exception may also be taken to the suggestion that a narcotic "simply affects that part of the brain which is not affected by the disease" (insanity). There is no evidence for the localising views here implied. Dr. Shaw relates a case of trephining in acute insanity with the object of relieving pressure and thinks that "with a better knowledge of those localities specially affected in insanity of different kinds direct interference will be of service beyond our dreams." Before acquiring "better" knowledge we require simply knowledge of the localisation referred to, and we are not aware that there is any, nor have the years which have passed since these surgical procedures were advocated led to their adoption. Dr. Shaw is confident that many cases of chronic delusional insanity are left uncured because we have not the courage to attack them surgically. Certainly we cannot yet claim that surgical familiarity with the contents of the cranial cavity that exists with respect to the abdominal. The localisation of delusions, here referred to, is at present hardly within the realm of sober thought. In a case of olfactory hallucination where sclerosis of the olfactory centre was found, Dr. Shaw thinks operative treatment would have been proper. Do surgeons remove the tip of the uncinate gyrus? There is much sound sense in the author's remarks in his last chapter on the treatment of insanity and on the value of official figures as to recovery. We regret that space does not allow us to refer further to these and to other interesting matter.

LIBRARY TABLE.

The Purification of Sewage. By SIDNEY BARWISE, M.D. Lond., B.Sc. Birm., M.R.C.S. Eng., D.P.H. Cantab. Second edition. London: Crosby Lockwood and Son. 1904. Pp. 220. Price 10*s.* 6*d.*—We entertained a favourable opinion of this book in our review of the first edition in THE LANCET of March 11th, 1899, p. 700. Since then further progress has been made in the application of biological methods to the disposal of sewage. In particular, improvements have been made in the mechanical arrangements for making the action of percolating filters automatic and in apparatus for the distribution of sewage. This section of the subject receives attention in Chapter X. of Dr. Barwise's book. The text is interleaved with illustrations of these mechanical appliances. Further, Dr. Barwise has added an appendix on the analysis of sewage and sewage effluents which formed the subject matter of a book issued separately some years ago. Dr. Barwise's ample experience of modern methods of sewage treatment makes what he has to say of practical value and an excellent idea of the present position of the sewage disposal question will be gained from consulting this volume, while his directions as to gauging the efficiency of a given method of purification by chemical analysis are to the point. For the most part these methods are simple and give valuable indications.

Elements of Anatomy and Physiology especially adapted for Nurses. By W. BERNARD SECRETAN, M.B. Lond., F.R.C.S. Eng. London: The Scientific Press, Limited. 1905. Pp. 74. Price 2*s.* net.—When lecturing to the nurses of the Royal Berkshire Hospital the author was struck by the difficulty of obtaining a suitable text-book which although embracing the whole of anatomy and physiology as far as these subjects are required by the average hospital nurse was yet devoid of all unnecessary and confusing matter. This little manual is an attempt to provide such a work. It is concise, the language is simple, and it is sufficiently illustrated. The book will be useful to nurses.

Religion and Health: their Mutual Relationship and Influence. By NORMAN PORRITT, M.R.C.S. Eng., L.R.C.P. Lond., Consulting Surgeon to the Huddersfield Infirmary. London: Skeffington and Son. 1905. Pp. 186. Price 3*s.* 6*d.*—This is an interesting volume. After dwelling on the analogies between religion and health Mr. Porritt gives a survey of the effects of Christianity on the healing art, followed by a relation of the bodily ills that the absence of religion has carried in its wake. In his chapter on the cult of Mrs. Baker Eddy the author offers that lady many possible ways of proving the doctrine which she propagates. The book is intended specially for the ministers of religion and throughout it runs the expression of opinion that it is to the moral reformer—the minister, the priest, the clergyman, the lay reader, the evangelist—we must look to bring home to the people the grave injury to the race and the physical deterioration which are brought about by the neglect of the laws of health. Every minister ought to be a minister of health, for he penetrates where no one else can, he alone knocks at a man's door and claims the right to enter and yet not be considered an intruder. The minister and his helpers should be able "to render 'first aid' in health and sanitation." The gospel preached in this volume will benefit the work of any minister of religion who considers it; the tidings make for health and sanity. We have read the book with much pleasure.

Handbook of Diseases of the Ear, for the Use of Students and Practitioners. By RICHARD LAKE, F.R.C.S. Eng., Surgeon to the Royal Ear Hospital; Lecturer on Practical Otology at the Medical Graduates' College. With three coloured plates. Second edition. London: Baillière, Tindall, and Cox. 1904. Pp. x.-242. Price 6*s.* net.—We noticed the first edition of this useful work shortly after its appearance and we are glad to see that it has reached a second edition, for it deserves success. It is sufficiently brief and elementary to be suitable for the reading of those who are desirous of obtaining a good general knowledge of the subject without being overburdened by an excess of detail. The present issue does not differ to any very great extent from the first edition but a careful comparison of the two will show that

numerous small alterations have been made, while here and there new sections have been added, for instance, the section dealing with rupture of the membrana tympani.

Burdett's Hospitals and Charities, 1905. London: The Scientific Press, Limited. Pp. 966. Price 5s. net.—The issue for the current year of this most useful work is quite up to the level of its predecessors. The information which it gives about hospitals, convalescent homes, homes for inebriates, and nursing institutions, not only throughout the British empire but in sundry foreign countries, is invaluable. The introductory chapters, too, whether we agree or not with Sir Henry Burdett's views, are most interesting reading. It is a book which no one who has anything to do with hospitals or their management can afford to be without.

The Land of the Blessed Virgin. By WILLIAM SOMERSET MAUGHAM. London: Heinemann. 1905. Pp. 228.—The land of the Blessed Virgin is Andalusia and Mr. Maugham possesses an evident faculty for enjoyment of that fascinating country. To begin with he can rightly appreciate the joys of laziness. Andalusia is a land where no one is in a hurry and for a worker in London, where most people have to do things whether they wish to or not, there is no greater charm than to go to a place where the prevailing feeling is, "If you can do a thing to-morrow don't do it to-day." Mr. Maugham seems to have found only one blemish—namely, the food; but in that respect we do not quite agree with him. He says: "The stomach used to roast meat and Yorkshire pudding rebels against Eastern cookery, and a Christian may sooner become a Buddhist than a beef-eater a guzzler of olla podrida." Rancid oil and garlic are not appetising here but they may be in Andalusia, and, like the Hebrews of old, anyone who has once been in the East, and Andalusia is the East, will remember the fish which he did eat in Egypt, the cucumbers and the melons and the leeks and the onions and the garlic. Mr. Maugham gives a delightful picture of Cordova and of Seville but Granada does not seem to have appealed to him so much as we should have expected. In one place he speaks of the sky being blue mixed with silver, an admirable description of the wonderful Spanish sky which produces the same effect on the eye as does a Morpho butterfly in certain lights. Altogether we commend this book as one written by a traveller who knows how to travel and who can rightly appreciate colour, sunshine, and the lotos land atmosphere of Moorish Spain.

JOURNALS AND MAGAZINES.

The Journal of Physiology. Edited by Sir MICHAEL FOSTER, K.C.B., F.R.S., and J. N. LANGLEY, F.R.S. Vol. XXXII., No. 2. Feb. 28th, 1905. London: C. F. Clay. Price 7s.—The contents of this number are: 1. On the Distribution of Potassium in Animal and Vegetable Cells, by A. B. Macallum, professor of physiology in the University of Toronto, with two plates. Professor Macallum finds that the hexanitrite of cobalt and sodium in solution and in the presence of acetate of sodium precipitates potassium from its solutions, the precipitate being an orange-yellow triple salt which is, according to K. Gilbert's investigations, the hexanitrite of cobalt, sodium, and potassium. As revealed by this method potassium occurs in both the cytoplasm and the extracellular structures. The cell nucleus contains none, nor is there any in the head of the spermatozoon or in nerve cells. The quantity is scanty in smooth muscle fibre but in striated fibre there is a condensation of the potassium in the dim bands, the rest of the fibre being free from it. It is abundant in the granular zone of the secreting cells of the pancreas immediately adjacent to the lumen. 2. On the Relation of Enterokinase to Trypsin, by W. M. Bayliss and Ernest H. Starling. These authors support the view of the Russian physiologist Pawlow that enterokinase acts as a ferment upon a precursor or prozymin, trypsinogen, which it converts into trypsin. 3. The Physiological Effects of Peptone and Allied Products; Part vi.: The Metabolism of Arginin, by W. H. Thompson. Feeding with arginin occasions an increase of nitrogen in the urine the greater part of which appears as urea. 4. The Action of Anæsthetic Quantities of Chloroform upon the Blood-vessels of the Bowel and Kidney, with an account of an artificial circulation apparatus, by E. H. Embley and C. J. Martin. 5. Researches on the Autolytic Degradation of Tissues; Part ii.: On the Influence of the Thyroid on Autolysis, by S. B. Schryver. 6. Effect on Blood Pressure of Proteolytic Products, by C. G. L. Wolf. 7. Experiments on Cystin and its Relation to Sulphur Metabolism, by C. H. Rothera. 8. On the Inter-relationship of Calcium and Magnesium Excretion, by John Malcolme. 9. The Post-natal Changes in the Thymus of Guinea-pigs and the Effect of Castration on Thymus Structure, by Alexander Goodall. This number of the journal also contains the Proceedings of the Physiological Society for Dec. 17th, 1904, and Jan. 21st, 1905.

The Journal of Nervous and Mental Disease for January contains an article by Dr. S. D. Ludlum, assistant physician at the Friends' Asylum, Philadelphia, entitled "A Preliminary Report on the Possible Relationship of Neuro-Fibrillar Changes to Insanity." Dr. Ludlum's work is based upon the examination of nerve cells of the cortex, the medulla, and the spinal cord in two cases of insanity, in a starved rat, and in an artificially exhausted rat. For comparison he used fresh normal tissue of the rabbit and the rat. The neuro-fibrils were stained by Cajal's method. The changes were practically the same in the starved rat and in the insane patients, the neuro-fibrils being almost absent in the cell bodies, represented by broken pieces of fibril and by lines of fine granules, whilst they were less affected in the cell processes. The exhausted rat's cells showed an early change, taking the stain feebly and presenting swollen fibrils. One of the patients was a case of mania-melancholia of long standing with mild dementia, in which acute depression came on 16 days before death. Dr. Ludlum thinks that the state of the neuro-fibrils accounts for this depression and that this state plays an important part in the insanities arising from malnutrition. He deduces this from the experiments upon the rats but all these experiments show is that under the conditions produced (starvation and exhaustion) the neuro-fibrils degenerate. The changes observed in these fibrils in the first insane patient might have been the result of the long-standing brain disease, not the cause of the final exacerbation of insanity which preceded death. The same explanation, that the changes were merely the outcome of disease, may be applied to the second case examined, which was that of a general paralytic. It is obvious that the task of separating cause from effect is rendered more difficult by working with cases of long-standing disease. This number also contains a report of a meeting of the New York Neurological Society held in October, 1904, at which Dr. B. Sachs opened a discussion on Dementia Præcox. Dr. Sachs thought that widely different cases were grouped under this term with little gain, that the old plan of clinical subdivision was more commendable, and that too grave a prognosis was given in the youthful insanities. The tenor of the discussion was to show that different types of mental disease were embodied under this heading and that in course of time subdivisions would be formed out of the cases so grouped, the present grouping being only provisional.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—The Registrar of the Royal College of Physicians of London has arranged that the April examination for the Membership shall commence this year on Tuesday, April 11th, instead of April 18th, which would have carried it into Easter week.

THE LANCET.

LONDON: SATURDAY, MARCH 11, 1905.

The Registrar-General's Sixty-Sixth Annual Report.

WE are indebted to the Registrar-General for a copy of his annual report for 1903, a volume which is always welcomed by THE LANCET and which this year has seen the light several months earlier than is usual. In reviewing previous issues of this work we have given expression to the hope that having regard to their importance to a large section of our profession these reports might in future be issued within a reasonable time after the close of the period to which they relate. It has not escaped our notice that in the final remarks appended to his first annual report the present Registrar-General endeavoured to justify the late appearance of these reports on the ground that more expeditious preparation would probably lead to less accurate, and therefore unsatisfactory, results. We are, of course, aware that the Treasury authorities are constantly clamouring for reduction of expenditure in the conduct of the Government offices under their control and we believe that the General Register Office is one of these. But we trust that Sir WILLIAM DUNBAR will forgive us if, on the ground of the high appreciation in which his reports are held by the medical profession, we urge yet again that increased efforts should be made to render them available more promptly—at any rate, in a shorter period than the 14 months which now have elapsed since the completion of the year dealt with in the report before us.

The Registrar-General's sixty-sixth annual report suffers nothing by comparison with its two predecessors, both of which we noticed in appreciative terms at the time of their publication. Several new features will be found in the present report. The presidents of the statistical bureaux of the principal European countries have responded to the invitation to augment the somewhat meagre information hitherto published in these reports with respect to the births, deaths, and marriages in the several countries and the Registrars-General of those British colonies in which records are available have for the first time contributed such information as they possess. The results now appear in the form of a new series of tables giving fairly uniform particulars for some 28 foreign countries, not only of births, deaths, and marriages, but of infantile mortality and of the mortality from the chief epidemic diseases, as well as from cancer and pulmonary tuberculosis. Not all of the foreign countries addressed have been able to comply fully with the English request but the Registrar-General entertains the hope that in process of time the list of countries able to furnish trustworthy statistics will be extended, thereby increasing the value of these international records. In view of the widespread anxiety caused both at home and abroad by the continued depression of the birth-rate the ordinary methods of presenting the ratios of birth and of marriage have been subjected to criticism in the General Register Office. As a result we learn that the total population is not the most satisfactory basis for the calculation of rates. As regards marriage-rates, a better standard is obtained by eliminating the already married persons from the population and by calculating the rates on the unmarried and widowed who are living at ages beyond 15 years, thus dealing with that section of the people among whom alone marriages take place. Calculated by this method the English marriage-rate is seen to have declined steadily throughout the last 20 years, whilst the rate computed in the ordinary way indicates, on the contrary, a slight increase in that period.

With regard to the birth-rate again we learn that the total population is not the best standard by which it may be measured because it does not take account of the age constitution of the female population and particularly of that portion of it which is of child-bearing age. For example, the population of women aged 15–45 years to the total population, which was 23·1 per cent. in 1871 and in 1881, rose to 25·0 per cent. in 1901; if, therefore, the average fecundity of the female population had remained constant the births registered in 1903, which, as a matter of fact, numbered only 948,271, would have amounted to more than 1,250,000. In view of these facts it is evident that a preferable method by which to measure the birth-rate is to calculate the proportion of births per 1000 women of child-bearing age. The disturbing factor of changing constitution of the population is mainly, though not entirely, eliminated by this method of measuring the birth-rate, which shows the amount of decrease to be far greater than that indicated by the rates based on the aggregate population. We have not space to reproduce the interesting tables in the report which fully support the above contentions, but we may say generally that whereas the English birth-rate calculated in the ordinary way appears to have decreased by 6·8 per cent. only in the last ten years the decrease computed on the numbers of women aged from 15 to 45 years is shown to have amounted to 11·5 per cent. As regards the calculation of rates of mortality, the same disturbing factor of changing age constitution of the living is operative in a similar way and necessitates the adoption of a standard population which is assumed to remain constant in regard to age and sex. In England this has for some years been the practice but owing to the impossibility of satisfactorily estimating the numbers of these sections of the population and of ascertaining the sex and age constitution of the people in the various foreign countries for which the details are now published, it is only possible for the purposes of international vital statistics to employ the total population as the basis for calculating the rates of birth, marriage, and death. In close relation to the question of a declining birth-rate, especially in those countries where the decline is serious, is the question of mortality among the infants who survive. With few exceptions we learn that a high rate of infantile mortality prevails in those countries possessing a high birth-rate; nevertheless, English experience shows that a high rate of infantile mortality may accompany a comparatively low birth-rate. In this country in the ten

years 1893–1902 infantile mortality averaged 152 per 1000 births. Of 24 countries or colonies furnishing the necessary data there were seven—viz., Italy, Chili, Ceylon, Prussia, Jamaica, Hungary, and Russia—where the average birth-rates ranged from 34·3 to 48·6 per 1000 of the population and the average infantile mortality ranged from 170 to no less than 333 per 1000 births. On the other hand, in Scotland and in Norway, with comparatively high birth-rates of about 30 per 1000, the average rates of infantile mortality were as low as 127 and 94 respectively in each 1000 births. Of the 28 countries furnishing returns France has the lowest average birth-rate, while the average rate of infantile mortality in that country amounted to 158 per 1000 births. In 13 of the 16 countries contributing additional statistics for the year 1903 infantile mortality was below the average of the previous ten years—the exceptions being Chili, Jamaica, and Queensland.

The question of the falling birth-rate in this country as well as in other parts of the British Empire has been prominently brought to the notice of the public by the recent Royal Commission on the Decline of the Birth-rate in New South Wales and by the interesting and instructive report of the Duke of DEVONSHIRE'S Inter-departmental Committee on Physical Deterioration. In connexion with this subject it is necessary to repeat a statement which has been many times advanced in these columns—namely, that the rate of mortality is affected in a serious and peculiar manner by changes in the birth-rate. The first effect of a continuous decline in the rate of birth is to *lower* the rate of mortality owing to the reduced proportion in the population of very young children, among whom the death-rate is always very high. In subsequent years the death-rate, as measured by total population, will be increased owing to the smaller numbers of survivors reaching those ages which are subject to lower death-rates; and this effect will last so long as the survivors of those born before the birth-rate began to decline form an abnormally large proportion of the population.

With regard to the proportion of deaths among the population that remain uncertified either by medical men or by coroners the Registrar-General remarks that the percentage of uncertified to total deaths in the year 1903 was the lowest on record. With reference to this subject, however, particular attention is directed in the report to the still abnormally high percentage recorded in the counties of Carnarvon and Hereford, as well as in the boroughs of Gateshead, Warrington, South Shields, and St. Helens, all of which held the same unenviable position in the annual report for 1902. It is, however, a remarkable coincidence that each of the above localities should have a *high* proportion of uncertified deaths together with a correspondingly *low* proportion of inquests. Analysis of the returns shows that the percentage of inquests and uncertified deaths to the total deaths in England and Wales was respectively 6·9 and 1·7. In the above-mentioned counties and boroughs, however, the proportion of inquests was low, ranging only from 3·6 to 5·5 per cent., whereas the percentage of uncertified deaths was excessive, ranging from 4·0 to 6·7. The Registrar-General, therefore, expresses the hope, in which we fully concur, that the coroners of these districts will give their cordial support to the object aimed at, by considering whether it might not be partially attained by holding inquests more frequently in the case of uncertified deaths which are referred to them. In the present connexion, however, and in justice to the coroners we may mention an important fact which probably may be unknown to the Registrar-General—namely, that the decision as to the number of inquests to be held in any particular place does not always rest with the coroner who in recent years has become in certain cases the officer of the local authority. As the holding of inquests means a considerable increment to the local expenditure it will readily be understood that these authorities will in some cases endeavour to reduce that expenditure to the lowest practicable amount. Having devoted so much space to a consideration of the important innovations in the Registrar-General's present report we have no room left for noticing the question of the death-rate, which is, after all, of most importance to our readers. To this subject, however, we purpose to return hereafter; meanwhile we congratulate Sir WILLIAM DUNBAR on the fact that the death-rate of England and Wales in the year 1903 was the lowest since the establishment of civil registration.

School Legislation and the Demands of Hygiene.

OF all the social problems which demand solution at the present day none is more urgent than that implied in the hygienic management of the children whom legislative enactments compel to attend our elementary schools. Since attendance is enforced rigorously by law, it is an obvious duty of the State to insure that school life shall not be fraught with danger to the health and the happiness of the scholars. There are reasons for thinking that a satisfactory state of things is as yet far from realisation. Only too often do we hear complaints from parents that school life involves risks of infection, with maladies of varying degrees of seriousness, which no amount of care can avoid. Many medical authorities, upon good evidence, are inclined to associate the great increase that has taken place in the prevalence of diphtheria with the herding together of children for purposes of instruction. If it is difficult to acquit our school system of all responsibility for the propagation of epidemic diseases, yet so far no trustworthy statistical evidence has been available for estimating the extent of its evil influence. A very interesting attempt to remedy this defect of evidence has recently been made by Dr. MYER COPLANS, the medical inspector of the schools which are under the Gloucestershire Education Committee, whose report to a subcommittee of this board will, we believe, shortly be published. Dr. COPLANS examined medically 6652 children in the schools of the Stroud district with a view to ascertain the effects of school life in spreading infectious diseases or evoking other ailments and the results of his inquiry tend to acquit the school system of so great a share in the propagation of scarlet fever, measles, and diphtheria as is sometimes assigned to it. We hope that this conclusion will be justified on further inquiry, but the question is very difficult to decide. The comparative prevalence of infectious maladies among children too young for attendance at school and among those of school ages affords, for example, no sound test, for we have to bear in mind that children not yet old enough to

go to school associate at home with those who do attend and that if a single child of a family contracts, say, scarlet fever at school he will probably be a source of infection to his younger brothers and sisters. Hence the fact of children suffering from such maladies before they reach school age does not acquit the school of responsibility for spreading the disease. The original source of infection in the case of many infants may have arisen thus. The comparative susceptibility of children at different ages also complicates the question, for if infants are more liable to suffer than older children, then the number of sufferers at home will tend to rise disproportionately when infection is introduced into any district. Only a comparison of the figures for each class extending over a long period of time could supply trustworthy grounds for arriving at a conclusion.

The Dundee Social Union lately has directed the preparation of a series of reports upon the physical condition of a large number of children attending six Dundee schools—four under the control of the Dundee school board and two voluntary schools. The reports have been made upon 1000 children taken upon no selective plan from the registers of the schools and have been collated by Miss MARY L. WALKER and Miss MONA WILSON, with the valuable assistance of Dr. CHARLES TEMPLEMAN, medical officer of health of Dundee, who has furnished an introduction. The report on the general medical examination of the boys was made by Dr. ALEXANDER P. LOW and of the girls by Dr. EMILY C. THOMSON, while Dr. G. TAYLOR GUILD reported on the ears, throats, and noses of the children, and Dr. E. F. MACLEOD NEAVE and Dr. W. E. FOGGIE on their eyes. The results are exceedingly interesting and show, as Miss WALKER and Miss WILSON say in their general preface, that an enormous amount of actual suffering among children is unnecessary or preventable, though the causes of the various evils being many the remedies must also be many. Taking pediculosis as an example of an obviously and easily preventable malady we find that of 1000 Dundee children the number, not only of those who were verminous but of extremely bad cases where the heads and the bodies of the children were in a foul state, was large. As a numerical statement under the heading of "cleanliness of body" 177 of the 1000 were classified as "bad," a tabulation which indicates the presence of vermin. Let us pass now to the more important subjects of physical development and definite bodily lesions. Some average measurements of Dundee children were submitted to the Inter-Departmental Committee on Physical Deterioration as evidence of retarded development and these figures have since been confirmed by the larger number of observations made at the instance of the Dundee Social Union. In these last-mentioned observations the average weights and heights of children from five to 13 years of age attending the elementary schools are compared with the weights and heights furnished by Mr. FRANCIS GALTON to the Anthropometric Committee of the British Association in 1881 and with figures given by that committee in 1883. At a secondary school in Dundee—the Harris Academy—480 children were also weighed and measured in order that a comparison might be made between children attending the elementary schools and children living in the same locality under better home conditions. At all ages from five to 13 years the height of the boys attending the Dundee elementary schools compares unfavourably with Mr. GALTON'S figures, while the average weight of boys of 13 years is about nine pounds less than Mr. GALTON'S estimate and the average weight of girls of 12 years attending the elementary schools is more than nine pounds below the average of the girls attending the Harris Academy. The children in the Dundee elementary schools were, at all ages from which a comparison could be made, distinctly below those at the Harris Academy in both weight and height.

Of the diseases of special organs and regions described in the reports compiled for, and published by, the Dundee Social Union we can only mention those affecting the heart, the eyes, and the teeth. Heart diseases were found in the large proportion of 7·47 per cent. of the children; among the boys these included 30 instances of valvular defect, the several forms being mitral stenosis, mitral incompetence, pulmonary systolic murmur, and slight impurity of the first sound in the mitral area. With respect to vision it was found that only 52·2 per cent. of the children could see to read the standard types at the proper distance. This did not necessarily mean that their refraction was normal, for, as a matter of fact, only 26 per cent. showed normal refraction and the remainder must have been straining their accommodation in order to read the types. The examination of the teeth led to the general result that caries of the teeth was very prevalent, hardly any of the children being free from it. Attention has been drawn lately to the insufficient food upon which many of the children of the poor have to subsist and to the impossibility of ill-nourished brains assimilating a due amount of mental pabulum. The food may in other instances be sufficient and the child yet may be unable to thrive upon it owing to defect in those much-neglected organs the teeth. An inquiry carried out by Mr. E. RICE MORGAN[1] into the state of the teeth of children in the Swansea educational area showed that of 295 children of both sexes only 11 had mouths free from dental defects, while on an average each child had more than three decayed teeth. Such figures need no comment. If we cannot, as HORACE says, permanently expel nature with a pitchfork, we may yet perhaps repel physical degeneration with a tooth-brush. The result of reading these various interesting reports is to learn how much preventable disease is present among the children of the poor; while the depression produced by this knowledge is tempered by the feeling that never before have so many wise and charitable efforts been directed towards the problems of school hygiene as are now at work.

The Colonies and Cancer Research.

A GOVERNMENT Blue-book of some 96 pages dealing with the subject of cancer research has just been published and presented to both Houses of Parliament. It contains the correspondence between the Colonial Office and the governors or high commissioners of the various colonies with the object of acquiring information as to the incidence of malignant disease and its causes, together with material both from man and animals for the Cancer Research

[1] Swansea Education Committee. Quarterly Report upon the Schools in the Upper Division of the County Borough of Swansea, by E. Rice Morgan, medical officer. Dec. 28th, 1904.

Committee to investigate. While its publication is a welcome evidence of the general interest which is now aroused by the inquiry into the nature and the causes of malignant disease, it must be confessed that as regards the information which it contains it is, on the whole, very disappointing. A gratifying feature of the book is the active and sympathetic interest in the work evinced by so many of the high officials of the colonial service. Both Mr. JOSEPH CHAMBERLAIN and his successor as Colonial Secretary, Mr. ALFRED LYTTELTON, emphasise very strongly and repeatedly the importance of the research, while many of the governors write sympathetically of the objects of the Cancer Committee and promise to assist by all means in their power the furtherance of those objects. Among these we may mention especially Lord MILNER and Sir F. M. HODGSON, the former of whom made valuable practical suggestions, which were subsequently adopted by the Imperial Cancer Research Fund, to promote the acquisition of material for microscopical investigation. The correspondence begins with a circular letter by Mr. JOSEPH CHAMBERLAIN, then Colonial Secretary, dated May 27th, 1903, and addressed to the governors and high commissioners of all colonies and protectorates, containing inclosures giving details of the scheme for cancer research and describing the constitution of the executive committee being formed for that purpose, together with an outline of its aims and requirements, with a view of "enlisting general interest in the scientific objects as well as the pecuniary position of the fund." Mr. CHAMBERLAIN in his letter requests that the matter may be furthered by giving publicity to it and by any other suitable means. This was followed by a second circular letter, dated May 29th, 1903, addressed to governors and high commissioners of Crown colonies and protectorates, inclosing a memorandum drawn up by Dr. E. F. BASHFORD, the general superintendent of research, and stating that "great importance is attached by the directors of the inquiry to the scientific investigation of cancer in communities where the conditions of life differ so widely as in the British Crown colonies," and requesting that the medical officers will carry out the directions in Dr. BASHFORD'S memorandum as completely as possible. A similar despatch was sent out next day to the governors of responsible government colonies Copies of these documents were sent to the Foreign Office with the request that, subject to Lord LANSDOWNE'S approval, they might be sent to protectorates administered by the Foreign Office. On Jan. 13th, 1904, Mr. LYTTELTON sent out another circular letter giving details of the results obtained up to that time and requesting information from those colonies from which no reply had then been received and urging "the necessity of not allowing this important matter to drop but of doing all that is possible to obtain for the Commission the material and information which they require for their difficult inquiry."

The replies to these repeated requests for information with a few noteworthy exceptions, among which we may specially mention those from Ceylon, Mauritius, Barbados, the Transvaal, and Queensland, have been unsatisfactory, varying from an almost curt statement of the impracticability of acquiring the information desired to a mere general statement or even a vague expression of opinion without statistics to support it. It cannot be too strongly urged that such expressions of opinion, though interesting and perhaps in some instances containing important truths, are valueless from the point of view of exact scientific investigation. From a number of colonies where there are extensive native or aboriginal populations, such as British Central Africa, British East Africa, and the Gold Coast, the medical officers state with almost striking unanimity that cancer is rare or unknown amongst them, and yet isolated cases are from time to time recorded, so that the possibility of conditions operating to prevent such cases coming to the notice of the medical officers, as pointed out by the committee of the Cancer Fund, must not be lost sight of. At the same time it is just in such countries that statistical details would be of the utmost value could they be obtained, for although the value of statistics is a matter of much dispute and often ridicule, at the present stage of cancer investigation, when we are groping in the dark for likely clues, statistics may afford valuable and promising indications of lines of research, more especially if it should be found that the incidence and the most frequent site of the disease are found to vary in different countries. Thus if it should be substantiated that cancer is rare amongst certain aboriginal tribes in certain countries a promising field for research would be opened up.

Among the most interesting reports sent in response to the circular letters from the Colonial Office is that from Sir ALLAN PERRY, principal civil medical officer of Ceylon, summarising the cases of cancer and sarcoma observed there. He finds that about 220 deaths occur from these diseases per annum; that cancer is a comparatively slight disease in Ceylon, one death from cancer occurring in every 16,820 persons living in 1903. In striking contrast to the condition in this country he finds that it is more common in men and that the most common site is in the oral cavity, which accounts for 55 per cent. of the cases. The preponderance in this situation is not confined to men but is also nearly as marked in women. The next most common situation is the penis which is affected in 32 per cent. of the cases. Cancer is stated to be more common in the northern province of Ceylon and it is suggested that the frequency of the mouth as the primary site is due to chewing betel which consists of tobacco, betel leaves, areca nut, and a little slaked lime. It is said that the people of the northern province are much addicted to betel chewing. The report of Dr. H. LORANS, acting medical director of Mauritius, is also of interest. He concludes from the statistics of cases treated in the general hospitals that cancer in Mauritius is much less prevalent than in England. During 1903 67 cases of malignant growth occurred among a total number of 21,356 patients treated and 20 only out of 1277 deaths in the hospitals were due to malignant disease. Statistics such as those from Ceylon and the equally interesting statistics of the Mayo Hospital, Lahore, published by Captain D. W. SUTHERLAND, I.M.S., in the Third Report of the Cancer Research Laboratories of the Middlesex Hospital, show that valuable information may be obtained from the statistical investigation of hospital and other records. No doubt the difficulties in the case of some of the colonies are very great, especially where

there are large native populations and no system of death registration, but much could be done in the matter of careful record of individual cases and the determination of the proportion which they bear to the total number of cases seen by each medical officer of those countries. We feel sure that the circular letter of Mr. LYTTELTON, dated Nov. 18th, 1904, pointing out the great importance of this very question of the incidence of cancer among native populations will meet with a generous response from the medical practitioners of those districts.

Annotations.

"Ne quid nimis."

CONVALESCENT HOMES ASSOCIATION.

A CONFERENCE of delegates from all the chief convalescent institutions supplying charitable relief to London patients was held at 20, Hanover-square, London, W., on March 2nd, Sir E. Hay Currie being in the chair. The Presidents of the Royal Colleges of Physicians of London and Surgeons of England and the President of the Hospitals Association were present, together with representatives from the following convalescent homes: Metropolitan, Seaford, Eastbourne, Gladstone, and St. Andrew's, Folkestone. The object of the conference was to obtain some form of union and coöperation between the various convalescent homes and it was thought that that could be best initiated and carried out through a central association in immediate touch with the hospitals on the one hand and the homes on the other. The first of the four propositions submitted, which were all unanimously agreed to, was that the increasing needs of medicine and surgery required some alteration in the character of the relief afforded by convalescent homes to the poor of London. In proposing this motion, Sir William S. Church said that the conference was not intended to reflect in any way on convalescent homes. All members of the medical profession were most grateful for the benevolence which had provided such institutions. He explained how the one scale of diet that was the rule at convalescent homes rendered them unsuitable places for the after-care of patients recovering from certain well-known diseases. He also pointed out the disadvantage of another almost universal rule that no patient could be received at these institutions who had an open wound. These defects could be obviated by rearrangement amongst the homes. Mr. J. Tweedy, who seconded the motion, showed how the need had arisen for alteration in the character of the relief afforded to convalescents. Sir Thomas Smith pointed out how the great increase in the number of operations at the London hospitals had intensified the need for the conference which had been convened. Sir R. Douglas Powell insisted on the recognition of the fact that there was no necessity for building new institutions and explained how the present accommodation for convalescents could be utilised by means of suitable coöperation. The next motion, proposed by Mr. E. A. Gruning, seconded by Lady Frederick Cavendish, and supported by Mr. M. O. Fitzgerald, arranged for the formation of an association to be called "The Convalescent Homes Association," which shall consist of convalescent institutions supplying charitable relief to London patients, the object of the association being to form a representative council to centralise effort and to promote efficiency and economy. On the proposition of Lord Lytton, seconded by Dr. J. Kingston Fowler, it was decided that the council shall consist of one representative from each convalescent institution and one representative from each of the great general hospitals of London and of such other lay and medical representatives whom it may be considered advisable to invite, the following to be *ex-officio* members of the council: The Presidents of the Royal Colleges of Physicians of London and Surgeons of England, the Dean of the Faculty of Medicine of the University of London, the President of the Central Hospital Council, and one representative from each of the great hospital funds. Sir Henry Burdett in a short speech proposed that a small executive council should be elected from the general council and that the honorary secretaries should be Dr. S. H. Habershon and Mr. Fitzgerald. This was seconded and after having been duly passed by the meeting a hearty vote of thanks to the chairman concluded the proceedings.

"THE NATION'S DRINK."

UNDER the above heading the *Standard* has recently published two admirable articles by "an expert" on (1) wine made in England; and (2) whisky made in England. The readers of THE LANCET well know our attitude upon the subject of drink and its adulteration and the writer in the *Standard* indorses in a striking way all that we have written. He completely exposes the humbugging tricks of a certain, and, it is to be feared, very large, section of the wine and spirit trade and his contribution throughout furnishes a strong appeal for immediate and serious legislative intervention. The worst feature of it all is, perhaps, that the practice of blending spirits is conducted under the very noses of Government officials who know perfectly well how flagrantly misleading to the public is the nomenclature adopted on the labels of bottles of brandy, whisky, and other spirits. We are almost weary of keeping these facts before the notice of our readers but our hope is that by doing so the day of retribution will be brought near. When shall we have a Government brave enough honestly and seriously to face this question? The articles in the *Standard* are surely sufficiently convincing for any intelligent person and they are evidently written by a well-informed writer. If they are not convincing the statements are a sufficient indictment to warrant the appointment of a committee of inquiry to determine what are the real facts. Its labours would, we are sure, reveal a discreditable state of things. If the public were merely conceded an honest description and an honest label they need hardly ask for more. The detention of all spirits in bond for a specified number of years would, we fancy, be a wholesome provision for the nation and the adoption of a revenue stamp on the bottle certifying how long the spirit had been so detained would be a progressive step.

THE IMPORTATION OF DISEASED PORK FROM DENMARK.

AN interesting correspondence has recently taken place between the Danish Minister of Agriculture and the medical officer of health of the City of London in regard to the importation of diseased meat from Denmark. It would appear that some years ago an arrangement was made that in all cases in which such meat was condemned in the City markets as unfit for food the labels attached thereto should be forwarded to the Danish Commissioner in order that inquiries might be made in each particular case. This system of returning labels was agreed to, provided that steps should be taken which would preclude the possibility of any diseased meat being imported from Denmark. So far as relates to beef this system produced an excellent result but it has miscarried in the case of pigs. During the three months October, November, and December, 1904, Dr. W. Collingridge reports that 39 pigs so marked were seized and during

the first fortnight of the present year 49 more were condemned. This would appear to be due to the application by the City medical officer in 1903 of the recommendations of the Royal Commission on Tuberculosis—recommendations, however, which were not generally adopted in Denmark. Subsequently (in January, 1905) "a Supplement to Instruction" was issued to the veterinary inspectors in Denmark in the following terms: "As it has been brought to the notice of the Minister that carcasses of pigs which have suffered from tuberculosis, even in a very minute degree, are condemned by English officers of health as unfit for human food, it shall from now henceforth be the duty of the veterinary inspectors authorised to inspect meat for export to retain from export to Great Britain the carcass of any pig examined according to the order of August 15th, 1903, in which, or in the organs of which, is found the smallest deposit of a tuberculous nature." Further, "as the removal of any part of the serous membranes in several markets in England causes a suspicion that the animal in question has suffered from tuberculosis, the veterinary inspector shall not pass for export to Great Britain any carcass of an ox or pig examined according to the said order from which any part of pleura or peritoneum has been removed." It is pointed out that carcasses of pigs showing no sign of disease when slaughtered will, nevertheless, if sent off closely packed before being properly cooled, arrive in a distant market in a state unfit for food. Small pigs in particular have of late developed a rickety state and it being unprofitable to "feed them off for bacon" they have been killed young for pork in many cases for export. Whilst these have been found perfectly sound and fit for food at the slaughter-house such has not been the case for export. Such carcasses have therefore not been detained by the inspector. In future, however, according to an additional "instruction" issued on Jan. 18th, "carcasses of pigs must not be passed for export before they are quite cold and in that state have been found perfectly firm and dry. Carcasses of rickety pigs must not be passed for export." Dr. Collingridge is to be congratulated on the satisfactory results of his representations and a word of praise is due to the Danish Government authorities for the courteous manner in which they have received these representations and have acted upon them.

CURRENT THEORIES OF THE HEREDITARY PROCESS.

THE sixth lecture of the series[1] was delivered by Professor W. F. R. Weldon at University College, London, on Jan. 31st, the subject of discussion being the Mendelian theory of heredity. This theory published in 1865 was forgotten for long and was rediscovered and brought into publicity in 1902. Mendel's work consisted of a laborious and long-continued investigation, chiefly carried out on certain varieties or races of peas and constituted an advance in the knowledge of the formation of hybrids, of the theory of inheritance, and of other biological matters. It was the first attempt to elucidate from the systematic study of heredity in definite races and varieties a formula of inheritance of characters. He thus crossed peas which had special differential characters as regards colour of cotyledons (yellow or green), shape, and outline (round, smooth, or considerably wrinkled). He found on crossing green-seeded plants with the yellow-seeded variety that the hybrid progeny of the first generation was uniformly yellow. This was an instance of dominance of the yellow character, the green character having become latent in the products of the crossing. These yellow hybrids, however, when intercrossed, gave rise to a mixed progeny of yellow-seeded and green-seeded plants, in the proportion of three yellow to one green, the latent green character reappearing in one-fourth of the descendants while the yellow still continued to show its dominance in the remaining three-fourths. The green character was thus seen to be recessive, and the yellow dominant, in the hybrids. These recessive green hybrids when carefully intercrossed bred true—the offspring were always green (purity of character). The dominant yellow hybrids, however, were only apparently pure, for when intercrossed they produced varied or mixed offspring—viz., true yellow plants which reproduced yellow descendants and spurious yellow plants which yielded both yellow and green descendants. To account for these facts Mendel designed a scheme or formula of inheritance in which the colour, form, and outline (smooth or wrinkled character) of the seeds were made to depend on embryonic "determinants" supposed to be present in the pollen grains and the ovules of plants. (The subject of determinants was discussed and explained in the fifth lecture.) Cast into the form of a genealogical table of generations the following represented the actual facts:—

1st generation.	Green seeded "pure" plant.		Yellow seeded "pure" plant.	
2nd generation.	Yellow hybrids all. By intercrossing they yielded the following:—			
3rd generation.	Yellow (pure type).	Yellow (impure type).	Yellow (impure type).	Green (pure type).
4th generation.	Yellow (pure type).	Mixed green and yellow offspring.	Mixed green and yellow offspring.	Green (pure type).

Mendel states that the determinants of certain characters showed in some cases repulsion towards determinants of other characters, that on the whole they tended therefore to segregate, and that in one generation certain determinants grew potent while others became latent. The distribution of the determinants, he said, was governed broadly by the law of chances or probability, and the distribution of the coloured seeds accordingly followed the same law. Thus it was possible to account for several of the actual facts and numerical proportions of characters obtained by the interbreeding of various races. Quite similar results in transmission occurred when long smooth peas were crossed with deeply wrinkled peas. In this case roundness was dominant in the first generation of hybrids. These hybrids when intercrossed gave rise to mixed offspring in the proportion of one of the wrinkled type to three of the smooth and long-seeded type. Finally, of the three smooth and long-seeded type two produced in turn mixed seeds and one produced round seeds. These conditions of colour, shape, wrinkling, and smoothness were severally independent in transmission and therefore complex segregations of characters occurred in later generations of the hybrids. Thus experimenting with two types of peas—viz., a green wrinkled form and a yellow round form—some 16 varieties of hybrids showing distinct aggregates of characters were obtained in a series of experiments conducted over four generations. To elucidate the complex process of the hereditary transmission of characters Mendel postulated a theory of "gametic purity" which has found many adherents at the present day.

[1] Abstracts of the first, second, third, fourth, and fifth lectures were published in THE LANCET of Jan. 7th (p. 42) and 21st (p. 181), Feb. 4th (p. 307) and 25th (p. 512), and March 4th (p. 584), 1905, respectively.

THE LONDON AND COUNTIES MEDICAL PROTECTION SOCIETY.

THE annual report of the council of the London and Counties Medical Protection Society was presented at the annual general meeting of the members held at the offices of the society at 31, Craven-street, Strand, London, on March 3rd, Dr. J. W. J. Oswald being in the chair. The first part of the report is taken up with the discussion of

the new schemes of medical defence and the council states that it is still waiting for some definite proposal to be made by the British Medical Association before binding itself to any definite course of action. Under the heading of "A Stitch in Time" the council impresses upon its members the importance of referring matters to the society at the earliest possible moment. Every year loss falls upon the society and upon one or two of its members owing to delay in reporting threatened troubles to the society. Occasionally also members begin by attempts to deal with difficult matters for themselves and only refer to the society when it has become obvious that a wrong line of action has been adopted. This is contrary to their own interests and the council advises that when a member becomes aware that accusations of negligent treatment are likely to be made or have already been made against him he should apply at once to the society and not, as often happens, begin by giving unrestrained vent to his wrath and then proceed to hand over to the society a case already prejudiced. In one case a member had his account for medical attendance disputed on the ground of alleged damage by a plaster which the patient said was a pitch plaster whereas it should have been a belladonna one. The member sued for his fees in the county court and the society's general secretary gave evidence on his behalf. The evidence showed that no mistake had been made and that the treatment was proper. The county court judge ruled that the medical man was in any case not liable and the patient was ordered to pay the medical man's bill. The claims during 1904 against members for damages for alleged negligence or unskilful treatment were uncompromisingly resisted and after more or less prolonged proceedings were abandoned. The forms of negligence and unskilfulness alleged were of very varied character and exemplified some of the disadvantages arising from a fancied knowledge of medicine by patients and their friends. In one case where a servant girl had been the source of a story to the effect that a member of the society had committed an indecent assault upon her under chloroform the prompt investigation instituted by the society put an end to what proved to be an absolutely impossible story. The society has also been able to check a considerable amount of the malicious gossip which is often very detrimental to medical practitioners. In view of the steady increase in the amount of the reserve fund, which on Dec. 31st, 1904, represented £2402, the council has decided to impose an entrance fee of 10*s.* on new members joining the society. Owing to the fact that the society has closed the year with two heavy cases for hearing in the High Court on hand the legal expenditure for the 12 months has exceeded that previously incurred in any one year by the society. The annual report and the balance-sheet were unanimously received and adopted by the meeting and the President, Vice-Presidents, council, officers, and auditors were all re-elected.

UNITY OF THE TUBERCLE BACILLUS.

EVEN those who hold most tenaciously to Koch's contention in favour of the duality of human and bovine tuberculosis must admit that the evidence which he adduced was almost wholly of a negative character and the results of subsequent researches have been such as to leave no reasonable doubt as to the essential identity beneath superficial and accidental differences of the bacilli of tuberculosis, avian as well as mammalian. This has recently been demonstrated by the almost exhaustive investigations reported in a "Habilitation Schrift" by Dr. Paul H. Römer of Marburg, embracing every possible combination and permutation of factors save only inoculation of the human subject. He experimented with no fewer than 52 strains derived from man, cattle, and rodents, and two from birds; these he passed in varying sequence through cows, sheep, goats, horses, guinea-pigs, rabbits, white mice, and fowls, cultivating them in glycerine serum, glycerine agar, potato agar, potato glycerine, and glycerine broth, diluting with physiological salt solution in regulated dosage for purposes of inoculation. The general results of his experiments, which with tables and plates fill over 100 pages, were that all animals were susceptible to infection by each and every strain, though some methods of culture and the passage through particular species of animals enhanced, and others enfeebled, the virulence of certain strains, and that consequently smaller or larger doses might be required. Thus, white mice, said by many observers to be immune, succumbed to long treatment with large doses of No. 1, a tubercle bacillus of human origin that had been cultivated for seven years and passed through a long succession of guinea-pigs. The differences in the appearance of the several cultures were determined by the media and the methods of cultivation rather than by the original source, some forming moist, viscid, and slimy deposits and others a dry, wrinkled felt, while morphologically some human, bovine, and ovine strains were quite indistinguishable and animals infected with one—e.g., ovine—tubercle culture reacted to human, bovine, and other tuberculins as well as to ovine, and *vice versâ* each tuberculin caused a reaction whatever the source of the tuberculous disease. Generally a strain more virulent than another to one animal was found to be so to all others under all conditions. The order of susceptibility was the guinea-pig, the rabbit, the horse, the goat, the sheep, and the ox, guinea-pigs being the most, and oxen, contrary to general belief, being the least, susceptible. The avian tubercle was obtained from two fowls which had fed on, and probably had been infected from, the viscera of a cow which had died from tuberculosis. Unlike the mammalian tubercles it was most virulent to cattle and least so to guinea-pigs, unless previously passed through some other mammal. Its immediate action on the guinea-pig was shown rather in the setting up of a toxic pneumonia than of the usual tuberculous process, but the most remarkable feature of this strain was that whether introduced by intravenous or intramuscular injection it failed to infect other fowls, although it was very virulent to rabbits. Intentional experiments on man are, of course, inadmissible, though from time to time we hear of undesigned and accidental inoculations with bovine tubercle, an instance of which was recently reported by E. Schindler of Prague.[1]

THE NEW CONVICT PRISON RULES.

IT has been a much debated question whether any attempt should be made to reform those who are sentenced to long terms of penal servitude. Elaborate experiments in this direction have been tried in America at the Elmira State Reformatory in New York and at the convict prison at Neudort, near Vienna, but with regard to Elmira it seems that the Government of New York State has declined to support the institution on the ground that the prisoners were made too comfortable. While it may be impossible to carry out any extensive reformation of habitual criminals, it is obvious that many first offenders may be amenable to kindly treatment, provided that steps are taken to keep them from the contamination of hardened offenders. The new prison regulations, which are to come into force in England on April 1st, appear to have been framed with this object. Their effect may be briefly stated. There is to be a separate classification of selected convicts sentenced to penal servitude who on conviction are under 21 years of age. This classification is to be made by the directors of the prison. The judge who tries the case has nothing to do with it. The classification is as follows: (*a*) selected convicts under 18 years of

[1] Prager Medicinische Wochenschrift, 1904, No. 52.

age who should be sent to a juvenile adult prison; (*b*) first offenders or persons not habitually criminal and who are considered eligible for the star class; and (*c*) ordinary convicts—i.e., habitual criminals, and so on. Provision is to be made for keeping these classes separate. It is to be the duty of the chaplain and the governor to endeavour to exercise personal influence over the convicts who are to receive education in the ordinary subjects of the elementary education code. They are also to be instructed in useful trades and industries which may fit them to earn a livelihood on release. It will be noticed that the principal effect of the rules above considered is to keep convicts under 21 years of age entirely separate from the hardened offenders. Convicts generally are dealt with in a second batch of rules by which it is provided that there shall be two divisions of penal servitude: "A" the ordinary division and "B" the long sentence division (for selected convicts who are sentenced to terms of more than ten years and who have served more than seven and a half years). All convicts in the ordinary division shall be classified by the directors immediately after conviction as follows—viz., (*a*) the star class; (*b*) the intermediate class; and (*c*) the recidivist (i.e., backslider) class. The classes will be kept apart as far as practicable. The star class is to consist of first offenders and persons who are not habitual criminals or of corrupt habits. Solitary confinement for not more than three months may be imposed upon members of this class. The intermediate class is to comprise first offenders whose general character and antecedents render them ineligible for the star class but who are not bad enough for the recidivist class. The latter class is for hardened criminals and persons who have forfeited a ticket-of-leave. They may be confined alone for a period not exceeding nine months. Convicts in the intermediate class may be promoted or degraded. Convicts in the long sentence division shall, when practicable, be kept in a prison, or part of a prison, set apart for them. They are to wear a distinctive dress, will have their meals together, and may earn a good conduct gratuity, part of which may be spent by them on little luxuries while in prison, the remainder to be devoted to their benefit in such manner as the directors may prescribe. A convict in this division may be degraded to the ordinary division if he misbehaves. In our opinion the new rules are well calculated to give the first offender every chance, while they do not unduly ameliorate the conditions of the hardened criminal.

OBESITY AS A STIGMA OF DEGENERACY.

THE condition of general obesity is, according to the opinion of Professor E. Heinrich Kisch of Prague, not infrequently a noteworthy sign of hereditary degeneracy. He has carefully observed 488 cases of marked adiposity and records his results in the *Berliner Klinische Wochenschrift*, No. 21, 1904. He states that in cases of hereditary obesity in females it is not uncommon to find a considerable development of hair on the upper lip, chin, and cheeks, even in quite young subjects, while young men of similar hereditary predisposition often approximate to the feminine type with scanty development of hair on the face. Further, he states that there is a tendency in such cases towards a condition of gigantism or early overgrowth and that in females there is frequently comparatively early commencement of menstruation, all of which conditions he regards as signs of degeneracy. He divides the cases observed by himself into four groups. The first group comprises 14 cases of very fat individuals, varying in age from nine to 15 years, eight being males and six females; in all of them the overgrowth of fat was marked from birth onwards. Some signs of degeneracy were present in every instance: in eight of the cases there was a general overgrowth in all directions, in nine cases deformities of the nasal septum, and abnormal development of the teeth in all of them. Three of the boys were distinctly feminine in type. The second group consists of 32 cases of the same character but of ages varying from 16 to 30 years, in all of whom the condition commenced in early childhood. There were 20 females and 12 males, all showing other evidence of developmental defects. All of the 12 men were somewhat of the feminine type—beardless or with very little hirsute growth on the face, very slight pubic development of hair, and breasts more like those of the female. Only four of the 20 women were of the male type. In eight of them there was early commencement of menstruation. 29 cases of this group showed small teeth badly developed. In nine there were abnormalities of the external ear. The third group comprised 213 cases, 106 males and 107 females, all with a hereditary predisposition to obesity but in whom the deposit of fat occurred later in life as the result of physiological or pathological conditions. In only 28 of these was any evidence of degeneracy forthcoming. In the fourth group there were 229 cases of acquired obesity, the result of errors of diet or nutrition, or of deficient exercise and other abnormal conditions, but in these cases there was no family predisposition and in only three of them were there any signs of hereditary degeneracy. We see, therefore, that in the first two groups in which the condition of excessive deposit of fat occurred in early life stigmata of degeneracy were present in every case, while in the third group the percentage of cases with such stigmata was only 13·2, and in the fourth group or the acquired cases the percentage was as low as 1·3. These observations of Professor Kisch are of considerable interest, since the causes of the development of obesity are somewhat obscure and any fresh facts tending to throw light upon them are of value. It is generally stated that the condition of obesity is hereditary in about half the cases and Professor Kisch's figures agree very closely with this statement. It is known, moreover, that in many situations of the body a condition of atrophy or degeneration is apt to be associated with a local deposition of fat in the organ, as, for example, around the muscle fibres in pseudo-hypertrophic paralysis and in the hilum of the kidney in chronic interstitial nephritis. Again, it is on record that an excessive deposit of fat is not uncommon in idiots and in some cases of chronic mental disorder and that it occurs sometimes in hysteria.

TORSION OF THE PEDICLE OF AN OVARIAN CYST IN A CHILD.

IN the *New York Medical Journal* of Dec. 17th, 1904, Dr. J. F. Erdmann has reported an interesting case of torsion of the pedicle of an ovarian cyst in a child. A girl, aged 13 years, was sent to him on Feb. 11th, 1904, by her medical adviser. She had had a number of attacks of abdominal pain which were supposed to be of appendicular origin. On Feb. 6th an attack began with vomiting and pain in the left side. The vomiting had continued almost daily but the pain at no time was referred to the region of the appendix. On palpation some pain was felt in the region of the appendix but considerably more in the vesical region and extending up to the umbilicus. The whole of the lower abdomen was rigid but the rigidity was especially marked in the region of the appendix. On rectal examination a mass could be felt. The temperature had ranged from 99° to 100° F. and the pulse from 98 to 130. On the day of examination the temperature was 100° and the pulse was 120. The abdomen was not markedly distended. A tentative diagnosis of disease of the appendix was made. On examination under ether a central mass which extended to the right was felt in the pelvis. The abdomen was opened and a gush of bloody

serum took place. A dark blue tumour which fluctuated and resembled a dislocated and strangulated spleen, for which it was mistaken, was found. On breaking down some adhesions it was found to arise from the right ovary. Its pedicle was twisted, producing a gangrenous condition. The tumour was easily removed. The appendix was congested and was also removed. The abdomen was closed without drainage and recovery was uninterrupted.

THE OVERLYING OF CHILDREN.

Mr. Gibson, the Manchester city coroner, recently held four inquests on children who had died from suffocation and remarked that these tragedies were "the usual thing during the week-end." One of the cases occurred at the Manchester Maternity Hospital. The child had slept with his mother and Dr. E. Vipont Brown, who had made a careful examination of the body, said "the mother told him that she found the child lying on her arm with his face towards her body." As a result of this occurrence he stated that separate cots had been ordered. In answer to the coroner he said that it was a dangerous practice for children to sleep with their parents. Accidental suffocation was the verdict in all four cases. This was followed by a letter to the papers, dated Feb. 22nd, in which Sir W. J. Sinclair stated that he and his colleagues had come to the conclusion "that the use of cots would be more dangerous to the infants than lying alongside the mothers," as "the chief danger to the newborn with their low vitality arises from the difficulty in keeping them warm." If the mother is too ill to attend to the infant "a special cot is used padded with special materials ..... and supplied in addition with artificial heat." This at any rate shows that the child *can* be kept warm in a cot. But as indicating how unlike the wards of a hospital are to the homes in the "mean streets," where most of these deaths occur from the mothers being more or less drunk and too stupid or too tired to notice that the child they have with them in bed is being suffocated, the statement follows that "the wards are constantly patrolled by nurses and as a result we have no overlaying and no infant deaths from chilling and, of course, there is no abuse of alcohol." No one can doubt the admirable care and attention that have insured the safety of the children at the hospital even when in bed with the mothers but the conditions are wide as the poles asunder from those obtaining among the dwellers in the slums. This is recognised by Sir W. J. Sinclair who, however, considers that the lowering of vitality from cold, with probably also an unsatisfactory food-supply that would, he thinks, result from the use of cots, would bring about greater evils than those ensuing from the infants being in bed with their mothers. Sir W. J. Sinclair's letter drew one from Dr. Vipont Brown and another from Dr. Ernest E. Reynolds, both advocating the use of cots. The former considers that, apart from escaping the danger of being overlain, the cot insures purer air for the child and the important matter of more regularity as to feeding than when in bed with the mother. As to the difficulty of obtaining cots for the very poor a drawer placed on two chairs, an orange box, or a clothes' basket will make a fairly efficient substitute. Dr. Reynolds, in answer to Sir W. J. Sinclair's inquiry as to how the coroner "got to know" that it is "a dangerous practice for children to sleep with the mother," says that in Manchester alone it causes from 80 to 100 preventable deaths every year. He cites the following illustration. About 15 years ago, at his request, the Manchester board of guardians provided proper cots for all the infants in the workhouse hospital, as deaths from overlying had occasionally occurred. Since that time only one death from that cause has taken place. A woman, against the rule, took her child from the cot into her bed. 20 minutes later the nurse missed the child from the cot. The mother was asleep and the child was partially under her, quite warm but dead. Dr. Reynolds says that he has made for the late city coroner, Mr. Smelt, some dozens of post-mortem examinations of these cases. Fatigue, without the aid of alcohol, may cause sleep heavy enough to make the mother quite unconscious that she has rolled over on to the child or has drawn the clothes over its head, or death may arise from "suckling the child and falling to sleep, suffocating it by the heavy breast." He has known cases where the mother, going to get the husband's breakfast, has covered the child with the heavy bedclothes "to keep it warm" and has returned in half an hour only to find the infant dead. He quotes Dr. H. Ashby's weighty authority in favour of the cot and absolutely against an infant being allowed to share the mother's or the nurse's bed. Dr. Reynolds does not believe that there is any difficulty for even the poorest to have a cot "artificially warmed" if necessary. There are unfortunately dangers for the infant on either hand and the controversy turns on whether the danger from foul air, an insufficient supply of air, or from the prevention of breathing by the pressure of the woman's body—the squeezing out of his life—is greater or less than that from the depression of vitality caused by the infant being placed in a cot and so exposed to cold. The cold can be guarded against but the other danger cannot unless the wards are "constantly patrolled by nurses" which is possible in a hospital but not in a slum. A rejoinder from Sir W. Sinclair is chiefly notable as illustrating the misquotation from Butler, "He that's convinced against his will is of the same opinion still."

WORK IN THE TREATMENT OF NEURASTHENIA.

IN the *Boston Medical and Surgical Journal* of Jan. 12th Dr. H. J. Hall describes an interesting experiment in the treatment of neurasthenia by work and protests against the almost universal prescription of rest in this condition. He points out that these patients display mental peculiarities before the characteristic symptoms of the disease appear. They worry too much and over-estimate the importance of small things. To prolonged worry he attributes the disease. Treatment by rest is often successful but sometimes it is not because the absence of occupation is not conducive to mental quietude. Dr. Hall's idea was to provide a wholesome and pleasant occupation differing as much as possible from that which the patient previously followed which would conduce to "self-forgetfulness." As such patients are clever people with artistic tastes he started a shop for the manufacture of pottery and the hand-weaving of fabrics. The equipment consisted of some half-dozen looms, spinning wheels, vats and dyes for colour work, a kiln for baking and glazing pottery, and a potter's wheel. A competent teacher was secured and when the shop was working and turning out articles a few patients suffering from a mild form of neurasthenia were introduced for a short time each day. The shop at once became popular and had a very encouraging effect on the patients. Subsequently basket-making was introduced and proved very useful. The work done was very good and to the resulting satisfaction of the patients Dr. Hall partly attributes its beneficial effect. The next step was to introduce patients affected with a more pronounced degree of neurasthenia. The difficulty was to eliminate the fatigue and the irritation which even the anticipation of change of task induces in these patients. The treatment was begun by rest in bed for a few days or a week. Then without any warning whatever the patient was ordered to do something simple, perhaps only to sit up in bed for a short time. The order given was changed from day to day. Then the patient was sent to the shop where he worked for gradually lengthening periods daily. Many

discouragements occurred and constant tact and vigilance were required but the results were good. After a few weeks of work the inertia of months and years was thrown off and the change in facial expression, in skill of movement, and in the whole morale of the patient was remarkable. Although the work appealed especially to people who had never done physical work and to whom the pleasure of manual work was a revelation it was particularly appreciated by those of limited means who felt that they were acquiring a useful trade by which they might support themselves if they could not return to their old life. To encourage a feeling of independence, when the patient turned out a work of value it was sold and he received the proceeds. It was surprising how the patients' lives readjusted themselves and how the petty annoyances and troubles again took their proper subordinate position. Dr. Hall also suggests this plan of treatment as a prophylactic measure. After he began to write his paper he ascertained that a similar method of treatment has been carried out successfully at Zürich by a layman named Grohmann who works under the direction of physicians.

THE ROYAL COMMISSION ON THE CARE AND CONTROL OF THE FEEBLE-MINDED.

Dr. James Craufurd Dunlop has been appointed an additional member of this Commission. This makes the second additional medical member who has been appointed since we pointed out in THE LANCET of Sept. 17th, 1904, that only one medical man, Dr. Frederick Needham, had been nominated to a seat on a Commission which has to deal with a subject so full of intricacy and responsibility. It will be remembered that the other medical member appointed was Dr. H. B. Donkin. Dr. Dunlop is assistant to the medical adviser to the Commissioners under the Prisons (Scotland) Act, 1877, at the Department of Prisons and Judicial Statistics, Edinburgh, and he is also superintendent of statistics in the Registrar-General's Office, Scotland, having succeeded to that post on the death of Dr. R. J. Blair Cunynghame which occurred in December, 1903. The *Times* states that no period can yet be specified for continuing the sittings of the Commission, the first of which was held in October last.

CHELSEA CLINICAL SOCIETY.

As briefly mentioned in our issue of March 4th the annual clinical debate, the subject being Chronic Constipation and its Medical and Surgical Treatment, will be held at the Chelsea Dispensary, Manor-street, King's-road, London, S.W., on March 14th and 21st at 8.30 P.M. On March 14th the speakers will include Mr. W. Arbuthnot Lane, Dr. T. Vincent Dickinson (the president), Dr. J. Foster Palmer, and Dr. W. H. Goddard. On March 21st the speakers will include Dr. William Collier, Dr. F. J. Smith, Dr. H. Campbell Thomson, and Dr. Leonard L. B. Williams. These meetings are open to all members of the medical profession.

A SPECIAL meeting of the Laryngological Society of London will be held at 20, Hanover-square, W., at 3 P.M., on Friday, March 17th. There will be an exhibition of pathological specimens on view from 2 P.M. in connexion with the attendance of many eminent foreign laryngologists who are coming to London for the Garcia centenary. Cases will be shown by Mr. H. Barwell, Dr. H. J. Davis, Dr. Dundas Grant, Dr. H. L. Lack, Dr. E. Law, Dr. W. Milligan, Mr. C. A. Parker, Mr. H. B. Robinson, Mr. P. R. W. de Santi, Sir Felix Semon, Mr. Charters J. Symonds, Dr. H. Tilley, Dr. StClair Thomson, Dr. Atwood Thorne, and Dr. P. Watson Williams. Professor Glück of Berlin will give a special demonstration on Saturday, March 18th, at 20, Hanover square, at 2 P.M., of his method of removal of the entire larynx, to which surgeons specially interested in the subject are cordially invited.

THE medical officer of health of the Cape Colony states that for the week ending Feb. 11th the condition of the colony as to plague was as follows. No case of plague in man was reported throughout the colony but plague-infected rodents were discovered at Port Elizabeth and at East London. Other districts of the colony were free from plague of any kind. As regards Hong-Kong a telegram received at the Colonial Office on Feb. 27th states that for the week ending Feb. 25th there were 2 cases of plague and 2 deaths from the disease. As regards the Mauritius there were 2 cases of plague for the week ending March 2nd and 2 deaths from the disease.

THE Executive Committee of the General Medical Council, which met on Monday, Feb. 27th, at the offices of the Council, received some interesting tables showing the results of the latest competitions held for commissions in the Medical Departments of the Navy, the Army, and the Indian service. The tables show well the successful position enjoyed by the diplomates of the London Conjoint Board. The committee appointed Professor Howard Marsh, professor of surgery in the University of Cambridge, to act as inspector of the surgical examinations of the University of Edinburgh

Sir Patrick Manson will take the chair at the dinner to be given on Wednesday, April 5th, to Mr. W. Johnson Smith by the medical staff of the Seamen's Hospital Society. Mr. Johnson Smith is retiring after 36 years' service and it is hoped that most of his old friends and colleagues will be able to be present on this occasion. Dinner tickets and all information respecting the dinner can be obtained from the honorary secretary to the dinner committee at the offices of the Seamen's Hospital Society, 13A, Cockspur-street, London, S.W.

AT the twenty-eighth annual meeting of the Irish Medical Schools' and Graduates' Association, to be held on March 18th, Surgeon-General C. Sibthorpe, C.B., will resign the presidential chair to Sir William Whitla who will preside at the festival dinner to take place the same evening at the Hotel Cecil, at 7.30 P.M. All communications should be addressed to Mr. E. Canny Ryall, 30, Harley-street, London, W.

AT the Royal Sanitary Institute, on Saturday, March 25th, at 11.30 A.M., a discussion will be opened on Municipal Milk Depôts and Milk Sterilisation by Dr. G. F. McCleary, medical officer of health of Battersea. The chair will be taken by Sir Shirley F. Murphy. In the afternoon visits will be made to the Battersea municipal milk depôt, disinfecting station, public mortuary, coroner's court, and shelter.

His Majesty the King gave a dinner party at Buckingham Palace on Saturday, March 4th. Amongst those who had the honour of receiving invitations were Sir William S. Church, Bart., President of the Royal College of Physicians of London, and Mr. John Tweedy, President of the Royal College of Surgeons of England.

BY the courtesy of the general secretary of the British Medical Association we have been favoured with an advance proof of the report of the Conference on Hospital Administration between representatives of the Association and of hospital boards which was held in the Board Room of the

Metropolitan Asylums Board on March 2nd. Next week we hope to deal at length with the matter.

Sir Frederick Treves, Bart., K.C.V.O., C.B., has been promoted to Knight Grand Cross of the Royal Victorian Order.

THE CONTROL OF HOSPITAL EXPENDITURE WITH EFFICIENCY.

AT a meeting of the Hospitals Association held at Charing Cross Hospital on March 3rd Dr. DONALD J. MACKINTOSH, M.V.O., medical superintendent of the Glasgow Western Infirmary, read an interesting and instructive paper upon the above subject. Mr. THOMAS BRYANT presided.

Dr. MACKINTOSH said that for the past 20 years he had devoted his attention to the study of hospital construction and administration. Taking the comparison per occupied bed as the only fair and possible unit of comparison he found from reference to "Burdett's Hospitals and Charities Annual" that the difference in 1903 between the London hospitals and those of the provinces was very striking. It ranged in hospitals with medical schools from £50 5*s.* in Dundee to £142 15*s.* in St. George's Hospital, London. In order that this difference might be accounted for a minute account of details should be made. He laid down as one of the first conditions of effective hospital management that the accounts should be kept in such a way that even a layman might be able at any time to see what was spent on *each* item in each *separate* department. This condition could be fulfilled only if another condition was also satisfied—viz., that the whole work of superintending the various departments should be focussed in the hands of a single administrator directly responsible for the institution to the board of managers. Accounts should be kept showing the exact expenditure day by day in each department of a hospital in order that there might be no difficulty in finding out whether there was waste or extravagance in a particular department or whether that waste, if it existed, was in the wards or in the nurses' or servants' departments. At the Glasgow Western Infirmary they did not manufacture certain drugs which he understood was the practice in some of the large London hospitals. He believed that such drugs could be purchased more cheaply from large manufacturers. Enonomy in the use of dressings was obtained by a system of entering into a book one day the materials required by a particular surgeon for use the following day. This book was examined in the superintendent's office. The system was worked by a staff consisting of a clerk and a typist. He doubted whether the detection of unusual expenditure under this heading would be possible to a lay superintendent. A similar system was adopted with regard to crockery and breakages from carelessness were easily detected. In considering the question of lighting and heating it was necessary to study the comparative cost of coal in different parts of the country and the quality of the fuel and the amount used. In the Glasgow Western Infirmary large boilers were used for generating steam and this steam was utilised for heating, cooking, working lifts, working a laundry which turned out every week over 20,000 articles, and by means of the same boiler power they generated electricity for use in the infirmary, not only for lighting the building but the grounds and, in addition, kept going a number of electric ventilating fans and electric lamps for the treatment of lupus. A record was kept of the work done by each engine in every hour of the day and night and also of the boiler pressure, the steam pressure, the temperature of the engine room, the amount of fuel consumed, and the amount of ashes removed. The electric current was generated at a lower cost than would be possible if taken from the public mains. As a matter of fact, it cost 1*d.* per unit for everything, while if taken from the corporation mains it would cost 3½*d.* for lighting and 1*d.* for motive power. It was possible that certain advantages might follow from the combination of the smaller hospitals in the purchase of goods but as regarded the larger hospitals the most economical and effective method was to make use of the information and guidance of experts who were members of hospital boards. Every large hospital should at all times be free to purchase its goods in the open market. But, after all, economy in purchase was only one aspect of the problem. Economy in use was probably of even greater importance. And this could be secured only by means of constant supervision.

A discussion followed in which Mr. THIES (secretary of the Royal Free Hospital) pointed out the differences between hospitals in Scotland and in London as regards the payment of rates and the cost of lighting and fuel.—Mr. SYDNEY HOLLAND, while agreeing in the main with the remarks of Dr. Mackintosh, said that the question as to whether the administrative head of a hospital should be the secretary or not depended upon the size of the hospital. If large it was absolutely necessary to subordinate the management to the heads of the various departments.—Sir HENRY BURDETT spoke in favour of the appointment of a superintendent for administrative purposes and a secretary for financial work.—Mr. WILLIAM MORTON pointed out the relation between economy of administration and the size and shape of the hospital buildings.—Dr. MACKINTOSH briefly replied and the meeting terminated with a vote of thanks to the chairman.

MEDICINE AND THE LAW

Frost v. *the Aylesbury Dairy Company.*

IN a leading article published in THE LANCET of Nov. 12th, 1904, p. 1361, in discussing this action we commented upon the attitude adopted by the learned judge who tried the case with regard to the use by the defendants of the well-known title of their firm. This his lordship appeared to regard as a kind of false pretence on their part because their milk-supply is not now drawn from the Aylesbury district, as formerly it was, and we observed that it would be interesting to hear what the Court of Appeal would say upon this point. We were not wrong in our suggestion that the Court of Appeal would not agree with Mr. Justice Grantham, for in delivering recently their judgments upon the defendants' appeal both the Master of the Rolls and Lord Justice Mathew expressed in plain terms their dissent from his view, the former saying that in his opinion it was unfortunate that such observations had been made. In his opinion "there was not the shadow of a foundation for any aspersion on the defendants in connexion with their bearing the name of 'The Aylesbury Dairy Company.'" Lord Justice Mathew, in dealing with this topic in the course of his judgment, said that there was no reason whatever for any reflection upon the defendants. They had imposed stringent conditions upon the farmer from whom they obtained the milk in question but it was obviously impossible, where their supply was drawn from different parts of the country, to see that each farmer complied in every respect with their conditions and requirements. His lordship, in the words of the *Times* report, "regretted that the use of the word 'Aylesbury' in the name of the defendant company was reflected upon by the learned judge (Mr. Justice Grantham). He desired to say that he did not concur in those reflections and in his opinion the defendant company came well out of the inquiry." With these observations we entirely concur; we have no doubt that the stringency of the regulations imposed by the Aylesbury Dairy Company upon the farmers who supply them enables them to provide as pure milk for their customers as any to be found in the country and to set an example of what the ordering of dairy farms should be. In this particular instance they have been held liable because all purveyors of food, and in any case a firm who advertise it as of exceptional purity, are responsible if from any cause it should not be fit for the purpose for which it is purchased. This issue was not affected by the unusual and surprising strictures of Mr. Justice Grantham upon the trade name under which the milk was sold and the Court of Appeal apparently held that as the words used did not constitute a misdirection upon any point of law as to which the jury had to be instructed they were not of such a nature as to entitle the defendants to a new trial. We would, however, point out that they were irrelevant and undeserved remarks, extremely likely to prejudice the jury in its decision upon the difficult and closely contested question of fact upon which the whole issue of the trial hung. The important issue in the trial was not whether the dairy company warranted its milk to be pure but whether the typhoid fever from which the plaintiff's wife died was due to

the company's milk or to some other cause. As to this there were expert opinions on both sides and a considerable conflict of evidence and it is difficult to say with confidence that the attack made upon the company, as if it were deceitfully using a name to which it had no right, may not have affected the view of the jury in judging the testimony which it adduced. Juries are easily misled by prejudice and it is to be regretted that the learned judge should not more carefully have weighed his words before giving free utterance to a hastily conceived and ill-founded opinion. It is also a hardship upon the defendants that they should have to pay damages which may be wholly or partly due to the judicial aspersion in question.

The Unlawful Detention of Medical Men.

As recently as Feb. 18th attention was called in THE LANCET[1] to an extraordinary case of the imprisonment of an obstetric assistant, sent out from the London Hospital, by the relatives of a parturient woman, whose friends forcibly kept the medical man in the house to await her labour and until it was completed. An experience of a similar description, also among aliens of the lower class, was recently the lot of another member of the staff of the same hospital. In this instance Mr. R. V. Dolbey, the resident accoucheur at the hospital, visited the patient and finding everything normal was about to leave one of his juniors to deal with it when the women present proceeded to resist his departure and called in three men to help them. These commenced to use physical force in order to detain him and if this circumstance placed him in a dangerous and unpleasant predicament it had the fortunate effect of enabling the magistrate to deal with the case by ordering a Russian subject, a tailor named Samuel Woolfson, to undergo two months' imprisonment with hard labour for assault. An offence committed against a medical man or a nurse administering aid as an act of charity among the suffering poor will strike even those whose experience is of the roughest districts as a novel feature in hospital work of a very undesirable character and that two such acts should have taken place within a few weeks of one another in the same locality makes the matter worse. It was, however, stated on behalf of the authorities of the London Hospital that difficulties which do not arise in dealing with our countrymen are experienced not infrequently with aliens. Presumably they are largely due to ignorance of the intentions of the medical man, of the nature of the charity on behalf of which he acts, and of the power of the law to punish an attack upon him, and the suggestion may be repeated which was made in THE LANCET of Feb. 18th that a full account of the penalty which has now been inflicted, with perhaps an explanatory note as to the position filled by the hospital in the life of the poor, if printed in Yiddish and freely distributed or handed to applicants for hospital assistance, might do much to prevent such occurrences in future. However downtrodden the humbler class of Jew may find himself in the Czar's dominions the position of his medical attendant must be even less enviable if the treatment of Mr. Dolbey by Samuel Woolfson and his companions was founded upon experience of what is permissible in Russia.

HINTS ON INCOME-TAX ASSESSMENT.

THE time is approaching when each member of the medical profession will receive a document from the Inland Revenue authorities inviting him to make a return of his income for purposes of taxation. To the man who is familiar with accounts or whose income is so large that he can afford to employ an accountant to make out his return this event is not of much concern. Members of the medical profession, however, are not always versed in the mysteries of bookkeeping. It is proposed to give an outline of the methods which the practitioner should adopt in arriving at the "income" upon which he is liable to pay 1*s.* in the £. It should be stated at the outset that there is no necessity to send in the calculations upon which the return is based. Where, however, the Commissioners challenge the return it may be convenient for the practitioner to be able to produce his figures.

[1] THE LANCET, Feb. 18th, 1905, p. 454.

Basis of the Tax.

Income tax is charged upon the profits of a practice, estimated upon a fair average of three years. This period ends either (*a*) on that day of the year immediately preceding the year of assessment on which the accounts are usually made up; or (*b*) on April 5th preceding the year of assessment. It follows that in order to estimate the income tax payable on Jan. 1st, 1905—i.e., the tax for the income of 1904—regard should be had to the average profits of the years 1901, 1902, and 1903. As accounts for the year are often made up to April 5th the period may run from April 5th, 1901, to April 5th, 1904. Where the practice was commenced within the period of three years the average income for the purposes of income tax is arrived at by taking the average yearly profit from the date of commencing practice. Suppose, for instance, the practice was commenced on April 5th, 1902, and £1000 were made in 1902 and 1903, the profit for the purposes of income tax would be £500 (subject, of course, to the deductions hereinafter referred to). If the practice was commenced within the year of assessment—i.e., 1904—the profits are to be estimated according to the best of the practitioner's knowledge and belief. The grounds upon which the estimate is based must, if required, be stated for the information of the Commissioners.

Income which must Not be taken into Account.

When he receives his "yellow form" the practitioner will do well to make no entry upon it which does not relate to his professional receipts. Income which is received *aliunde* is not to be entered. Thus income which comes under any of the following heads must not be entered: (*a*) income from any office or employment in the public service or under any public body, or any annuity, &c., payable out of public revenue; (*b*) the salary of a medical officer of health and the fees of a public vaccinator (these are taxed under Schedule E and should not be entered on the yellow form); (*c*) any income derived from ownership or occupation of land or unfurnished houses or buildings in the United Kingdom; and (*d*) income from which income tax has been deducted before it reached the recipient. [N.B. Dividends are paid *less* income tax.] Although income which is derived from the above sources is not to be entered on the return, it must nevertheless be stated in full if the practitioner desires to obtain exemption or abatement. (See sub-title, "Exemptions," *infra*.) The income of a person resident in the United Kingdom which is earned abroad and which is not brought, remitted to, or received in, the United Kingdom need not be entered.

Exemptions.

If the income does not exceed certain specified amounts exemption or abatement is allowed. Thus: (*a*) total exemption may be claimed when the income from all sources does not exceed £160 per annum; (*b*) abatement of duty on £160 may be claimed when the income exceeds £160 but does not exceed £400; (*c*) abatement of duty on £150 may be claimed when the income exceeds £400 but does not exceed £500; and (*d*) abatement of duty on £120 may be claimed when the income exceeds £500 but does not exceed £700. For the purpose of estimating "income" in order to obtain an abatement the claimant must set forth every source whence the income is derived with the amount derived from each source. Where income is derived from a profession, office, or employment he must state the nature and particulars thereof and where carried on. In this connexion it is to be noted that for the purpose of claiming abatement or exemption income *from every source* is to be entered—i.e., income from investments, public offices, &c. The practitioner who, on looking through his books, finds that his "average income" is something over £700—say £800—must not rashly assume that he is not entitled to any abatement. He may find that when he has made the deductions from gross income which are allowed by law his true income (for the purposes of taxation) will be less than £700. Similarly, a man earning £200 may find that, after deductions have been made, the true income is below £160 and that he is therefore entitled to complete exemption.

How the Profit is Ascertained.

Income tax being, as has been stated, a tax upon the profits of a profession, certain deductions must be made from income in order to arrive at this profit. The practitioner will naturally look into his books to see what his income has been for the last three years. Such books will disclose the

gross receipts. Leaving debts (whether good or bad) out of account for the moment the following deductions may be made from gross receipts: 1. Money expended upon the repair of any premises occupied by the practitioner in connexion with his practice. 2. Money expended upon the supply of drugs and the supply and repair of implements and utensils not exceeding the sum usually expended for such purposes according to the average of the three years preceding. Under the heading "repairs of premises" may be included any repairs at a dispensary or the consulting room. The cost of improvements, however, could not be deducted under this head. For instance, the enlargement of a dispensary would hardly come within the word "repair." The amount to be deducted for repairs and implements is to be calculated on the average of three years. So, if £100 worth of drugs and implements were purchased in 1903 and no other drugs or implements in the two previous years the deduction should be £33 6*s.* 8*d.* 3. The rent of premises used solely for the purposes of business and not as a place of residence (e.g., a dispensary). 4. If the practitioner resides in the house where he carries on his practice he is entitled to deduct a proportion, not exceeding two-thirds, of the rent which he pays for the house. 5. Any other disbursements or expenses wholly and exclusively laid out for the purposes of the practice Under this head it is conceived that the practitioner may deduct: (1) the entire cost of keeping horse and carriage or motor, including the cost of repairs, provided such horse and carriage or motor is used exclusively in the practice. (Where, however, it is used to a large extent by the practitioner's wife, or for private purposes, the entire cost of upkeep could not be deducted. Opinions differ as to the amount which may be deducted in such a case. Probably the best course for the practitioner to adopt is to deduct the whole cost and let the Inland Revenue authorities raise the question if they think proper.) Inasmuch as the purchase of a horse and carriage or motor involves an outlay on capital account it is submitted that an annual charge for depreciation might also be made; (2) the salary of any assistant, nurse, or secretary whom he may employ exclusively for the purposes of his practice; (3) the wages of any servant employed exclusively for the practice, such, for instance, as a coachman or chauffeur, and the board of any such servant (if paid by his master); (4) travelling expenses incurred in the course of visits to patients; (5) cost of heating and lighting surgery or consulting room; (6) cost of telephone, telegrams, stationery, and stamps (including receipt stamps); (7) cost of cleansing professional premises and such part of a private residence as is used for professional purposes; (8) rates on such proportion of a private residence as is used for the purposes of the practice and all the rates paid in respect of premises exclusively used for professional purposes; (9) annual subscriptions to medical societies, medical protection societies, &c; (10) law costs incurred in recovering debts; (11) cost of bottles, &c., used in the dispensary; and (12) losses accruing from any accident happening in the conduct of the practice—e.g., a carriage accident or injury while operating, unless such loss is covered by insurance.

Deductions not Allowed.

The following is a list of expenses which *may not* be deducted:—(*a*) interest on capital, or any annual interest, or any annuity, or other annual payment payable out of the profits or gains. For instance, suppose a man purchased a practice for £1000 to be paid off out of the profits of the practice by five instalments of £200. These instalments cannot be deducted. Similarly, if a man purchases a practice for £1000, which he borrows at 4 per cent., he cannot deduct £40 a year for interest; (*b*) any sums invested or employed as capital or on account of capital withdrawn from the practice. For instance, money spent in buying out a retiring partner, or in purchasing a motor-car could not be deducted; (*c*) any sums expended in improvement of premises, or written off for depreciation of land, buildings, or leases; (*d*) any loss not connected with, or arising out of, the practice; (*e*) any expenses of maintenance of the practitioner, his family, or establishment; (*f*) any loss recoverable under an insurance or contract of indemnity; (*g*) any sum paid as income tax on profit or gains, or on the annual value of trade premises; (*h*) any premium for life insurance (but an allowance upon this head may be made as set out below); and (*i*) educational expenses, such, for instance, as lecture fees, or fees for attending classes in order to take out a diploma of public health.

How Debts are to be Treated.

Good debts appearing in the books to be due to the practitioner may be entered amongst gross receipts, care being taken that they are not brought into account as cash receipts when actually paid. Bad debts, if proved to be bad to the satisfaction of the Commissioners, may be deducted. With regard to doubtful debts, a deduction may be made according to their estimated loss or deficit.

Insurance Premiums.

Insurance premiums are not treated as business expenses for purposes of deduction but are dealt with separately. After all the foregoing deductions have been made the resulting figure is entered upon the yellow form. From this amount a deduction may be claimed for life insurance premiums actually paid. The amount so paid must be entered up in the proper place on the form and the claimant must be prepared to produce the insurance company's receipt if required. The allowance claimed must not exceed one-sixth of the claimant's net personal income from all sources. It is important to notice in this connexion that it is only premiums paid to an English insurance company or to an approved Colonial company which may be deducted. Thus a premium paid to an American or other foreign company would not be allowed for.

The Profits of a Partnership.

Hitherto we have only dealt with questions which arise in relation to the income tax of a single practitioner. The principles above enumerated also apply where the profits of a practice are divided among two or more partners. Certain questions arise, however, in relation to the assessment of a partner or partners which must not be overlooked. In the first place, the computation of duty for the partnership should be kept distinct from any other duty chargeable on the members separately. A return made by the senior partner resident in Great Britain is sufficient to satisfy the authorities. A separate return must not be made in respect of the return of any partner unless he desires to claim an abatement. Thus, suppose the share of a partner in the proceeds of the practice did not exceed £500, it would be worth his while to claim an abatement. He may do so by filling in the form of declaration which is to be found in the yellow form. Suppose there is a change in the partnership either by reason of the death or retirement of a partner, or owing to the admission of a new partner, within the period of three years. In such a case annual profit must be estimated upon the average of three years, unless it be shown to the satisfaction of the Commissioners that the profits have fallen short, or will fall short, from some specific cause to be alleged to them and proved since such change or succession took place or by reason thereof. For example, suppose the senior partner had some special knowledge which enabled him to earn the largest proportion of the partnership income. His demise might reduce the annual profits to a very small figure. It is anticipated that upon a fact of this kind being proved to the Commissioners a reduction would be made.

Looking Back.

FROM

THE LANCET, *SATURDAY*, March 10, 1827.

ARTIFICIAL PUPIL.

Case of a Lady born Blind, who received Sight at an advanced age by the formation of an Artificial Pupil. By JAMES WARDROP, Esq., F.R.S. Edinburgh, Surgeon Extraordinary to the King, &c.

[*From the Philosophical Transactions.*]

READ BEFORE THE ROYAL SOCIETY, JUNE 15, 1826.

As imperfections in the original structure of our organs of sense, which are remediable by art, are extremely rare, and as cases of successful operations on these organs essentially contribute to illustrate their functions, as well as to throw light on the operations and development of the human mind; the following instance of vision being imparted to a lady born blind, by an operation at an advanced period of life, will, it is hoped, not be considered unworthy of being submitted to the consideration of the Royal Society.

The case, besides establishing the curious physiological fact, that the nerve of the eye can remain fit to receive the impressions of external objects, though totally excluded for a long series of years from the performance of that function, claims a much higher interest in a philosophical point of view; some of the facts here detailed confirming in a remarkable manner what BERKLEY had predicted of "a man born blind being made to see," in the 79th Section of his "New Theory of Vision," published in the year 1709. He says, "a man born blind being made to see, would, at the first opening of his eyes, make very different judgments of the magnitude of objects intromitted by them from what others do. He would not consider the ideas of sight with reference to, or as having any connexion with, the *idea* of touch." It may also be observed, that in the present case the blindness was more complete, and the period at which vision was acquired was much later in life, than in any instance which has hitherto been recorded.

The lady, whose case forms the subject of this paper, was observed, during the first months of her infancy, to have something peculiar in the appearance of her eyes, and an unusual groping manner, which made her parents suspect that she had defective vision. When about six months old, she was placed under the care of a Parisian oculist, who performed an operation on both her eyes, with a view to afford her sight. The operation on the right eye was, however, followed by violent inflammation, and a collapse of the eyeball, thus causing a complete destruction of the organ of vision. The operation on the left eye, though equally unsuccessful in attaining its object, was not followed by any alteration in the form or size of the globe. From the account stated by her friends, it was impossible to form any correct notion of the state of her eyes previous to the operations which were performed. It seems, however, extremely probable that the blindness, which was attempted to be remedied, had been produced by congenital cataracts, and that these operations had for their object the removal of the opaque lenses.

From the above early period she had continued totally blind, being able merely to distinguish a very light from a very dark room, but without having the power to perceive even the situation of the window through which the light entered; though in sunshine or in bright moonlight she knew the direction from whence the light emanated. With regard therefore to the degree of sight, this lady was more completely blind than the boy in the celebrated case related by Mr. Cheselden, in the 35th vol. of the Transactions of the Royal Society; for in that instance the boy knew black, white, and scarlet apart from one another; and when in a good light he had that degree of sight, which generally continues in an eye affected with cataract; whereas in this lady, the pupil being completely shut up, no light could reach the retina, except such rays as could pass through the substance of the iris.

When she was placed under my care, she had reached her 46th year. The right eye-ball was collapsed, but the left retained its natural globular form. The cornea of this eye was transparent, except at one point near its circumference, where there was a linear opacity, which had probably been the cicatrix of the wound made during the operation in her infancy. The anterior chamber of the eye was of its natural capacity, but I could not distinguish any vestige of a pupil, some streaks of yellow lymph being deposited in irregular manner over the central part of the iris. There was every reason to believe the retina was sound; for though she could not perceive objects, nor had any notion of colours, yet the circumstance already mentioned of her being able to distinguish between a very light and a very dark chamber and between a gloomy day and sunshine, rendered it probable that the nerve was in a sound and natural state. Under this impression, I thought that the restoration of her sight, by making an artificial pupil, was practicable, and certainly well worthy of a trial. Accordingly, on the 26th of January, I introduced a very small needle through the cornea, passing also through the centre of the iris; but I could not destroy any of the adhesions which had shut up the pupillar opening. After this operation she said she could distinguish more light, but she could perceive neither forms nor colours. The result of this first attempt justified the favourable views entertained of the state of the retina, and Mr. LAWRENCE, who at this time was consulted, coincided with me in this opinion.

On the 8th of February, a second operation was performed, which consisted in passing a sharp-edged needle through the sclerotica, bringing its point through the iris into the anterior chamber, repassing it into the posterior chamber at a small distance, and then dividing the portion of iris thus included between the two perforations of the needle. Only a very slight inflamation followed,—the light became offensive to her,—she complained of its brightness, and was frequently observed trying to see her hands; but it was evident her vision was very imperfect; for although there was an incision made in the iris, some opaque matter lay behind this opening, which must have greatly obstructed the entrance of light.

On the 17th of February, a third operation was performed, which consisted in still further enlarging the opening in the iris, and in removing the opaque matter, by a needle introduced through the sclerotica. This was followed by a very slight degree of redness.[1]

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 76 of the largest English towns 8746 births and 5123 deaths were registered during the week ending March 4th. The annual rate of mortality in these towns, which had been 17·4, 17·3, and 15·7 per 1000 in the three preceding weeks, rose again to 17·1 per 1000 last week. In London the death-rate was 17·1 per 1000 and it also averaged 17·1 per 1000 in the 75 other large towns. The lowest death-rates in these towns were 8·4 in Grimsby, 9·6 in Aston Manor, 10·0 in Smethwick, 10·3 in Walthamstow, 10·5 in Hornsey and in Rotherham, and 10·7 in Northampton; the highest death-rates were 21·9 in Stockton-on-Tees, 22·0 in Liverpool, 22·2 in Reading, 22·9 in Sunderland, 23·4 in Nottingham, 24·3 in Tynemouth, and 29·7 in Merthyr Tydfil. The 5123 deaths in these towns last week included 486 which were referred to the principal infectious diseases, against 401, 410, and 365 in the three preceding weeks; of these 486 deaths, 190 resulted from measles, 105 from whooping-cough, 86 from diphtheria, 46 from diarrhœa, 34 from scarlet fever, 24 from "fever" (principally enteric), and one from small-pox. No death from any of these diseases was registered last week in Willesden, Bournemouth, Great Yarmouth, Norwich, Walsall, Handsworth (Staffs.), Grimsby, Wallasey, or Bury; while they caused the highest death-rates in Portsmouth, Southampton, Reading, Hanley, West Bromwich, Nottingham, and Newport (Mon.). The greatest proportional mortality from measles occurred in Portsmouth, Southampton, Reading, West Bromwich, Nottingham, Stockton-on-Tees, Newport (Mon.), and Merthyr Tydfil; from scarlet fever in Rochdale and Blackburn; from diphtheria in West Ham, Ipswich, West Hartlepool, and Newport (Mon.); from whooping-cough in Hanley, Bradford, and Rotherham; and from diarrhœa in West Bromwich and Newport (Mon.). The mortality from "fever" showed no marked excess in any of the large towns. One fatal case of small-pox was registered in Leeds but none in any other of the 76 towns. The number of small-pox cases under treatment in the Metropolitan Asylums Hospitals, which had been nine, eight, and 15 at the end of the three preceding weeks, were again 15 at the end of last week; four new cases were admitted during the week, against one, three, and seven in the three preceding weeks. The number of scarlet fever patients in these hospitals and in the London Fever Hospital at the end of the week was 2002, against 2077, 2017, and 1987 at the end of the three preceding weeks; 290 new cases were admitted during the week, against 260, 241, and 224 in the three preceding weeks. The deaths in London referred to pneumonia and diseases of the respiratory system, which had been 400, 378, and 335 in the three preceding weeks, rose again to 353 last week, but were 18 below the number in the corresponding period of last year. The causes of 74, or 1·4 per cent., of the deaths in the 76 towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in West Ham, Portsmouth, Bristol, Leeds, Hull, and in 43 other smaller towns; the largest

[1] Here follow five columns detailing the interesting experiences of the patient. The first few lines of the last paragraph state: "From this period, till the time of her leaving London on the 31st of March, being forty-two days after the operation, she continued almost daily to gain more information of the visible world, but she had yet much to learn."

proportions of uncertified deaths were registered in Reading, Handsworth (Staffs.), Birmingham, Birkenhead, Liverpool, Blackburn, Halifax, and South Shields.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been 18·2, 18·9, and 18·3 per 1000 in the three preceding weeks, further declined to 17·4 per 1000 during the week ending March 4th, but was 0·3 per 1000 in excess of the mean rate during the same period in the 76 large English towns. The rates in the eight Scotch towns ranged from 10·2 in Leith and 15·2 in Edinburgh to 19·0 in Aberdeen and 20·1 in Greenock. The 582 deaths in these towns included 27 which were referred to whooping-cough, 16 to diarrhœa, eight to measles, four to "fever," three to diphtheria, and two to scarlet fever. In all, 60 deaths resulted from these principal infectious diseases last week, against 49, 52, and 63 in the three preceding weeks. These 60 deaths were equal to an annual rate of 1·8 per 1000, which was 0·2 per 1000 above the mean rate last week from the same diseases in the 76 large English towns. The fatal cases of whooping-cough, which had been 23, 25, and 27 in the three preceding weeks, were again 27 last week, and included 18 in Glasgow, three in Paisley, and two in Dundee. The deaths from diarrhœa, which had been 13 in each of the two preceding weeks, increased last week to 16, of which eight were registered in Glasgow, four in Edinburgh, and three in Aberdeen. The fatal cases of measles, which had been seven, four, and seven in the three preceding weeks, further rose to eight last week and included five in Glasgow and two in Edinburgh. The deaths referred to different forms of "fever," which had been five, seven, and eight in the three preceding weeks, declined again last week to four, of which two occurred in Greenock. The fatal cases of diphtheria, which had been three, three, and six in the three preceding weeks, declined again to three last week, and included two in Glasgow. The deaths referred to diseases of the respiratory organs in these towns, which had been 130, 119, and 116 in the three preceding weeks, declined again to 114 last week and were 41 below the number in the corresponding period of last year. The causes of 23, or nearly 4 per cent., of the deaths in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 25·2, 23·5, and 25·5 per 1000 in the three preceding weeks, further rose to 30·7 per 1000 during the week ending March 4th During the past four weeks the death-rate has averaged 26·2 per 1000, the rates during the same period being 16·9 in London and 16·4 in Edinburgh. The 223 deaths of persons belonging to Dublin registered during the week under notice were 38 in excess of the number in the preceding week and included eight which were referred to the principal infectious diseases, against seven, eight, and five in the three preceding weeks; of these, three resulted from measles, three from diarrhœa, and two from diphtheria, but not any from small-pox, scarlet fever, whooping-cough, or "fever." These eight deaths were equal to an annual rate of 1·1 per 1000, the death-rates last week from the principal infectious diseases being 1·3 in London and 1·4 in Edinburgh. The fatal cases of measles, which had been two and three in the two preceding weeks, were again three last week. The deaths from diarrhœa, which had been three, one, and one in the three preceding weeks, rose again last week to three. The 223 deaths in Dublin last week included 46 of children under one year of age and 71 of persons aged 60 years and upwards; the deaths of infants showed a slight increase, while those of elderly persons were very considerably in excess of the number in the preceding week. Six inquest cases and five deaths from violence were registered; and 92, or more than two-fifths, of the deaths occurred in public institutions. The causes of 13, or nearly 6 per cent., of the deaths registered in Dublin last week were not certified.

VITAL STATISTICS OF LONDON DURING FEBRUARY, 1905.

IN the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious disease it appears that the number of persons reported to be suffering from one or other of the nine diseases specified in the table was equal to an annual rate of 5·9 per 1000 of the population, estimated at 4,684,794 persons in the middle of the year. In the three preceding months the rates had been 7·2, 6·1, and 5·8 per 1000 respectively. The rates were considerably below the average in Paddington, Kensington, Chelsea, the City of Westminster, Hampstead, and Holborn, while they showed the largest excess in Hammersmith, Bethnal Green, Stepney, Poplar, Wandsworth, and Woolwich. The prevalence of small-pox last month was slightly in excess of that recorded in the preceding month; of the five cases of this disease notified during February, two belonged to Islington, two to Camberwell, and one to St. Pancras. The Metropolitan Asylums hospitals contained 15 small-pox patients at the end of last month, against three, 17, and 15 at the end of the three preceding months; the weekly admissions averaged three, against one, four, and one in the three preceding months. Scarlet fever showed a slightly increased prevalence last month; among the various metropolitan boroughs this disease was proportionally most prevalent in Bethnal Green, Stepney, Bermondsey, Wandsworth, Lewisham, and Woolwich. The number of scarlet fever patients under treatment in the Metropolitan Asylums hospitals, which had been 2566, 2349, and 2067 at the end of the three preceding months, had further declined to 1941 at the end of last month; the weekly admissions averaged 231, against 249, 233, and 209 in the three preceding months. The prevalence of diphtheria during February showed no appreciable variation from that recorded in the preceding month; the greatest proportional prevalence of this disease occurred in Hammersmith, Shoreditch, Bethnal Green, Stepney, Poplar, and Woolwich. The Metropolitan Asylums hospitals contained 337 diphtheria patients at the end of last month, against 893, 800, and 836 at the end of the three preceding months; the weekly admissions averaged 118, against 123, 99, and 115 in the three preceding months. Enteric fever was slightly less prevalent during February than it had been in the preceding month; among the various metropolitan boroughs this disease showed the greatest proportional prevalence in Fulham, St. Marylebone, Hackney, Stepney, and Wandsworth. The number of enteric fever patients in the Metropolitan Asylums hospitals, which had been 178, 237, and 134 at the end of the three preceding months, had further declined to 105 at the end of last month; the weekly admissions averaged 13, against 25, 22, and 17 in the three preceding months. Erysipelas was proportionally most prevalent in Chelsea, St. Pancras, Finsbury, Bethnal Green, Stepney, and Battersea. The 26 cases of puerperal fever notified during the month included four in Battersea, three in Fulham, three in Camberwell, two in the City of Westminster, two in Bethnal Green, two in Stepney, and two in Southwark.

The mortality statistics in the table relate to the deaths of persons actually belonging to the various metropolitan boroughs, the deaths occurring in public institutions having been distributed among the several boroughs in which the deceased persons had previously resided. During the four weeks ending Feb. 25th the deaths of 5899 persons belonging to London were registered, equal to an annual rate of 16·4 per 1000; in the three preceding months the rates had been 14·6, 18·4, and 17·0 per 1000. The lowest death-rates in London last month were 11·7 in Hampstead, 11·8 in Stoke Newington, 12·8 in Paddington, 13·1 in Wandsworth, 13·4 in Woolwich, and 13·9 in Greenwich; the highest rates were 18·7 in Bethnal Green, 18·8 in Bermondsey, 19·6 in Shoreditch, 21·0 in Holborn, 21·6 in Southwark, and 23·8 in the City of London. The 5899 deaths from all causes included 393 which were referred to the principal infectious diseases; of these, one resulted from small-pox, 92 from measles, 41 from scarlet fever, 53 from diphtheria, 136 from whooping-cough, 15 from enteric fever, and 55 from diarrhœa. No death from any of these diseases was recorded last month in Stoke Newington, while they caused the lowest death-rates in Paddington, Hampstead, Holborn, Camberwell, Deptford, Lewisham, and Woolwich; and the highest rates in Fulham, the City of London, Shoreditch, Bethnal Green, Stepney, Southwark, and Bermondsey. The fatal case of small-pox belonged to Islington. The 92 deaths from measles were 87 fewer than the average number in the corresponding periods of the ten preceding years; this disease was proportionally most fatal in St. Pancras, Finsbury, Shoreditch, Stepney, Poplar, and Wandsworth. The

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING FEBRUARY, 1905.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated population in the middle of 1905.	NOTIFIED CASES OF INFECTIOUS DISEASE.											DEATHS FROM PRINCIPAL INFECTIOUS DISEASES.											Deaths from all causes.	Death-rate per 1000 living.	Deaths of infants under one year to 1000 births.
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cholera.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Typhus fever.	Enteric fever.	Other continued fevers.	Diarrhœa.	Total.	Annual rate per 1000 persons living.			
LONDON	4,694,794	5	1085	668	5	96	2	26	364	—	2151	5·9	1	92	41	53	136	—	15	—	55	393	1·1	3899	16·4	113
West Districts.																										
Paddington	147,935	—	19	6	—	—	—	1	10	—	36	3·2	—	—	—	—	6	—	—	—	1	7	0·6	145	12·8	86
Kensington	180,083	—	15	12	—	3	—	—	13	—	43	3·1	—	1	2	1	10	—	1	—	2	17	1·2	233	16·9	128
Hammersmith	119,037	—	31	29	—	1	—	1	7	—	69	7·6	—	1	—	4	6	—	—	—	—	11	1·2	154	16·9	121
Fulham	157,210	—	27	20	—	5	—	3	10	—	65	5·4	—	3	3	4	8	—	—	—	5	23	1·9	199	16·5	91
Chelsea	74,496	—	9	3	—	—	—	—	7	—	19	3·3	—	—	1	—	3	—	1	—	1	6	1·0	102	17·8	115
City of Westminster	175,606	—	28	7	—	2	—	2	5	—	44	3·3	—	—	2	1	6	—	1	—	—	10	0·7	211	15·7	115
North Districts.																										
St. Marylebone	123,453	—	19	5	—	6	—	1	10	—	41	4·1	—	4	2	—	2	—	—	—	—	8	0·8	172	17·3	106
Hampstead	88,142	—	10	3	—	1	—	—	4	—	18	2·7	—	1	—	—	2	—	—	—	—	3	0·4	79	11·7	136
St. Pancras	236,183	1	58	30	1	6	—	—	24	—	120	6·6	—	3	1	3	6	—	—	—	2	20	1·1	331	18·3	156
Islington	342,994	2	63	30	—	7	—	1	15	—	118	4·5	1	4	4	6	7	—	1	—	3	26	1·0	421	16·0	103
Stoke Newington	52,828	—	11	7	—	1	—	—	—	—	19	4·7	—	—	—	—	—	—	—	—	—	—	—	48	11·8	117
Hackney	228,479	—	52	32	—	9	—	—	19	—	112	6·4	—	6	—	1	8	—	2	—	4	21	1·2	259	14·8	124
Central Districts.																										
Holborn	56,461	—	8	3	—	1	—	—	2	—	14	3·2	—	1	—	—	—	—	—	—	—	1	0·2	91	21·0	55
Finsbury	98,207	—	22	10	—	1	—	1	9	—	43	5·7	—	6	—	—	—	—	—	—	—	6	0·8	134	17·8	125
City of London	22,425	—	6	1	—	—	—	—	2	—	9	5·2	—	1	—	—	1	—	—	—	1	3	1·7	41	23·8	194
East Districts.																										
Shoreditch	116,565	—	25	22	—	—	—	1	10	—	58	6·5	—	15	3	3	10	—	—	—	—	31	3·5	175	19·6	86
Bethnal Green	130,401	—	50	40	—	2	2	2	13	—	109	10·9	—	4	5	2	5	—	—	—	1	17	1·7	167	18·7	152
Stepney	305,466	—	118	79	4	13	—	2	33	—	249	10·6	—	11	3	9	5	—	1	—	9	38	1·6	415	17·7	111
Poplar	170,280	—	42	38	—	5	—	—	14	—	99	7·6	—	6	1	4	2	—	—	—	3	16	1·2	239	18·3	147
South Districts.																										
Southwark	208,523	—	27	17	—	2	—	2	18	—	68	4·1	—	1	5	6	11	—	—	—	4	27	1·7	346	21·6	139
Bermondsey	129,006	—	45	17	—	3	—	—	5	—	70	7·1	—	4	—	1	5	—	—	—	6	16	1·6	186	18·8	106
Lambeth	313,045	—	44	27	—	5	—	—	15	—	91	3·8	—	—	2	2	10	—	—	—	3	17	0·7	384	16·0	92
Battersea	177,532	—	37	18	—	3	—	4	17	—	79	5·8	—	3	2	1	1	—	3	—	1	11	0·8	221	16·2	99
Wandsworth	265,392	—	125	30	—	11	—	—	19	—	185	9·1	—	11	—	3	5	—	2	—	3	24	1·2	267	13·1	93
Camberwell	271,240	2	57	25	—	1	—	3	24	—	112	5·4	—	—	1	—	11	—	—	—	1	13	0·6	316	15·2	99
Deptford	114,495	—	31	4	—	3	—	—	10	—	48	5·5	—	—	—	1	1	—	1	—	1	4	0·5	144	16·4	117
Greenwich	103,493	—	13	14	—	2	—	—	10	—	39	4·9	—	—	2	1	1	—	—	—	2	6	0·8	110	13·9	115
Lewisham	144,420	—	53	10	—	2	—	1	10	—	76	6·9	—	1	1	—	2	—	1	—	—	5	0·5	160	14·4	100
Woolwich	125,372	—	39	29	—	1	—	1	9	—	79	8·2	—	—	1	—	2	—	1	—	2	6	0·6	129	13·4	110
Port of London	—	—	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

41 deaths from scarlet fever were slightly below the corrected average number; among the various metropolitan boroughs the greatest proportional fatality from this disease was recorded in Fulham, St. Marylebone, Shoreditch, Bethnal Green, Southwark, and Greenwich. The fatal cases of diphtheria were 53 last month, against an average of 144 in the corresponding quarters of the ten preceding years; this disease was proportionally most fatal in Hammersmith, Fulham, Shoreditch, Stepney, Poplar, and Southwark. The 136 deaths from whooping-cough were 72 below the corrected average number; among the various metropolitan boroughs the highest death-rates from this disease were recorded in Kensington, Hammersmith, Fulham, Shoreditch, and Southwark. The 15 fatal cases of "fever" showed a decline of 30 from the average number in the corresponding quarters of the ten preceding years; the greatest proportional mortality from enteric fever occurred in Chelsea, Hackney, Battersea, Wandsworth, Deptford, and Woolwich. The 55 deaths from diarrhœa were equal to the corrected average number; among the various metropolitan boroughs this disease was proportionally most fatal in Fulham, Stepney, Southwark, Bermondsey, and Greenwich. In conclusion, it may be stated that the aggregate mortality in London last month from the principal infectious diseases was nearly 43 per cent. below the average.

Infant mortality, measured by the proportion of deaths among children under one year of age to registered births, was equal to 113 per 1000. The lowest rates of infant mortality were recorded in Paddington, Fulham, Shoreditch, Lambeth, and Wandsworth; and the highest rates in St. Pancras, the City of London, Bethnal Green, Poplar, and Southwark.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Fleet Surgeon J. Menary to the *Good Hope*, on recommissioning, to date Feb. 28th. Staff Surgeons: R. S. Bernard to the *Terrible*, to date Feb. 28th; and A. G. W. Bowen to the *Amethyst*, undated. Surgeons: A. Woollcombe to the *Pandora*, undated; J. H. McDowall to the *Good Hope*, to date Feb. 28th; and F. R. Mann to the *Firequeen*, to date March 6th.

ROYAL ARMY MEDICAL CORPS.

Lieutenant G. F. Rugg is seconded for service with the Egyptian Army (dated Feb. 10th, 1905).

The undermentioned Majors to be Lieutenant-Colonels (dated Jan. 31st, 1905):—J. R. Forrest, Brevet Lieutenant-Colonel M. W. Russell, G. E. Moffet, H. A. Haines, G. E. Hale, D.S.O., C. W. Johnson, A. T. I. Lilly, C. C. Reilly, A. De C. Scanlan, W. Turner, W. E. Berryman, S. E. Duncan, and R. Caldwell.

The undermentioned Majors are placed on retired pay (dated Jan. 31st, 1905): B. F. Zimmermann, A. Stables, J. D. Moir, R. Crofts, D.S.O., H. D. James, and G. M. Dobson.

Lieutenant S. M. Adye-Curran to be Captain (dated Nov. 28th, 1904).

VOLUNTEER CORPS.

Royal Garrison Artillery (Volunteers): 1st Shropshire and Staffordshire: Surgeon-Lieutenant-Colonel E. Cureton is granted the honorary rank of Surgeon-Colonel (dated March 8th, 1905). 1st Worcestershire: Surgeon-Lieutenant G. H. Rutter to be Surgeon-Captain (dated March 8th, 1905). 1st Monmouthshire: John O'Keefe to be Surgeon-Lieutenant (dated Feb. 25th, 1905).

Rifle: 3rd Volunteer Battalion the Royal Fusiliers (City of London Regiment): James Searson to be Surgeon-Lieutenant (dated March 8th, 1905). 2nd Volunteer Battalion the King's (Liverpool Regiment): Supernumerary Surgeon-Lieutenant J. G. Martin to be Surgeon-Captain and to remain Supernumerary (dated March 8th, 1905). 18th Middlesex: Surgeon-Lieutenant-Colonel C. Godson is granted the honorary rank of Surgeon-Colonel (dated Feb. 25th, 1905). 7th Middlesex (London Scottish): Surgeon-Lieutenant A. H. Pirie to be Surgeon-Captain (dated Feb. 21st, 1905).

ROYAL ARMY MEDICAL CORPS (VOLUNTEERS).

The Aberdeen Company: Lieutenant D. Rorie, from the Black Watch Bearer Company, to be Lieutenant (dated March 8th).

THE WAR IN THE FAR EAST.

The stupendous struggle between the vast armies under General Kuropatkin and Marshal Oyama remains at an acute stage as we go to press. Enough is known to make it clear that a terrible drama of death and of anguish worse than death is being enacted, but for the time being no more can be said with certainty.

A report has been published by General Trepoff, chief medical officer of the Manchurian Army, giving particulars of the officers and men sent from the front, sick and wounded, to Kharbin, Stretensk, Khavarovsk, and other places in the rear of the seat of war, from the beginning of operations up to Jan. 14th (Jan. 1st, O.S.). The report relates to those officers and men who came under the attention of his staff in the hospitals over which he had direct control and does not include the losses at Port Arthur. Accurate particulars of the numbers killed in action are not available. The wounded officers were 1710 and the sick 2308, the wounded men 53,890, and the sick 72,531, making a grand total of 130,439. Of these, 107 officers and 3900 men died in the hospitals; a total of 17,722 were permanently invalided and 9429 were sent to European Russia to recuperate. At the date of the return there remained 21,554 in the hospitals.

Correspondence.

"Audi alteram partem."

THE CAUSATION OF LEPROSY.

To the Editors of THE LANCET.

SIRS,—The last number of the *Scottish Medical and Surgical Journal* contains a paper from the pen of Dr. Armauer Hansen of the utmost interest in reference to the causation of leprosy. Excepting by the few who love controversy for its own sake it will be read with much satisfaction by all, for it brings the rival camps of contagionists and non-contagionists as nearly as possible into union. It was Dr. Hansen's discovery of the lepra bacillus which gave new life to contagionist doctrines and it has been under his supposed leadership that measures for "the stamping out of leprosy" by compulsory segregation have been carried out in various countries. Prior to his renowned discovery Norwegian authorities (Danielssen and Boeck) were strenuous in their denial of contagion. That discovery, however, brought a change and made an epoch. Another step is, however, now to be taken. With that noble candour which is so marked a feature in his character the discoverer himself now admits that for practical purposes he has fallen back on the older creed. Speaking of the circumstance that in Norway lepers are allowed to travel, without precautions, in public vehicles Dr. Hansen states: "We have no particular rules for the transport of patients, *I see no reason for them.*" He goes on to add: "Leprosy is a disease which it is not necessary to have any particular dread of"—that is, not as regards its contagiousness—and he finally makes full admission that there must be some other and more important agency at work. "In order to stimulate it [the bacillus] into activity there are evidently required special circumstances—circumstances which we unfortunately know nothing of."

These pregnant expressions appear to admit quite fully that in the spread of leprosy contagion (in the sense of communication by touch, breath, clothes, &c.) plays only so small a part that it may be safely neglected and to assert that there is some other more efficient factor. Now those who advocate the food (or, more definitely, fish) hypothesis by no means ignore the bacillus. On the contrary, they assert that if only the living bacillus be received into the stomach it is efficient *per se* to the production of leprosy. The facts as to the disease in young children make this very probable. In this matter we are on the same platform with Dr. Hansen, if not, indeed, even more advanced in his direction than himself, since we are prepared to ignore all other "circumstances" if only the bacillus be received in the way mentioned. We have joined his camp in this belief, whilst he has now joined ours in denying the importance of precautions against other modes of contagion.

The question which remains open for debate between us is as to the nature of the "special circumstances" which are as a rule required in order "to stimulate the bacillus into action." He thinks that we know nothing of them. Some of us, on the other hand, hold that facts collected all over the world, and nowhere with more obvious pointing than in Norway, clearly indicate their nature. It is not, however, my intention on the present occasion to discuss that question. My object in asking you to publish this letter is simply to draw attention to the fact that our foremost authority on leprosy now definitely refuses to recognise the importance of precautions against contagion. Surely those who are responsible for the miseries of Molokai and Robben Island may suitably lay to heart Dr. Hansen's declaration that "leprosy is a disease which it is not necessary to have any particular dread of."

I am, Sirs, yours faithfully,

March 2nd, 1905. JONATHAN HUTCHINSON.

THE INCIPIENT STAGE OF INSANITY.

To the Editors of THE LANCET.

SIRS,—Your annotation under the above heading in THE LANCET of Feb. 25th, dealing with a pamphlet by Mr. Charles Williams of Liverpool, quotes the latter as saying that his view, that from hallucinations alone a person should never be pronounced insane, is opposed to that generally held by the profession. According, therefore, to Mr. Williams the profession in general holds that from hallucinations alone a person should or could sometimes be pronounced insane. I entirely decline to believe that medical men, even excluding those specially engaged in the department of mental disorders (whom, however, he does not exclude), are so ignorant of the elements of psychology as such a view would imply, or so inferior to Mr. Williams in this elementary knowledge. Your annotation clearly conveyed to me that there was no reason to suppose that the general view in this matter differed at all from Mr. Williams's and that there was no likelihood of a diagnosis of insanity being made on hallucinations alone.

I understand him to say in the last paragraph of his letter that all the books on insanity he has read and all the superintendents of asylums he has spoken to teach and hold that persons suffering from hallucinations alone (for, of course, it is a question of these *alone*) are usually not insane. That is, they are sometimes insane. Will Mr. Williams mention the books which teach that hallucinations alone can constitute insanity and name the asylums where superintendents are prepared to receive and to detain persons suffering from hallucinations alone?—I am, Sirs, yours faithfully,

EDWIN GOODALL.

Joint Counties Asylum, Carmarthen, March 6th, 1905.

*** Mr. Williams did not represent our annotation correctly. We made no "complaint that persons suffering from hallucinations are not usually considered insane."—ED. L.

THE MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.

To the Editors of THE LANCET.

SIRS,—As president of the Medico-Psychological Association and in that capacity chairman of the meeting held on Feb. 23rd at the North Riding Asylum I write to correct the report of proceedings published in your issue of March 4th on page 585 as it is inaccurate in a very important particular.

The Medico-Psychological Association at its last annual meeting decided that the period of training for nurses and attendants, before examination for the purpose of obtaining the certificate of competency in mental nursing, should be extended from two to three years, so as to bring the period of training in asylums into line with that in general hospitals. The resolution, which was moved by Dr. J. Carlyle Johnstone and seconded by Dr. E. B. Whitcombe, was not framed for the purpose of disturbing this principle but with the object of insuring that the entire period of training must be served in one institution. The amendment, which Dr. T. Outterson Wood proposed, contained no reference whatever to limiting the period of training to two years as is represented in your report and it may be said that there is no more ardent supporter in the association of the recent lengthening of the period of training than Dr. Outterson Wood. His amendment was framed with the purpose of allowing that the period of training already fixed at three years should be spent in not more than two institutions. This was adopted by the association. The error in your report which I have referred to so entirely misrepresents the action of the association that I venture to ask you to publish this comment.

I am, Sirs, yours faithfully,

Queen Anne-street, W., March 7th, 1905. R. PERCY SMITH.

*** The reporter who supplied us with the account of the quarterly meeting of the Medico-Psychological Association of Great Britain and Ireland, referred to above by Dr. Percy Smith, endorsed his copy with a note to the effect that he sent the report "authorised by the secretary of the Medico-Psychological Association and at his request."—ED. L.

PROPOSED AMALGAMATION OF THE MEDICAL SOCIETIES IN LONDON.

To the Editors of THE LANCET.

SIRS,—I feel sure the majority of the members of the medical profession in London hail with satisfaction the proposed amalgamation of the medical societies. For some years I have thought what is required is the establishment of an Academy of Medicine in London, for which I trust the prefix Royal could be obtained. In this academy the various societies could be grouped in sections dealing with the different branches of medicine, surgery, and obstetrics. The members of the societies would become *ipso facto* members of the Academy of Medicine, but the Fellowship of the academy should be conferred as a mark of distinction on those members who were in the opinion of the executive worthy of that honour. Further, by amalgamating the funds of the different societies it might be possible to acquire additional property in Hanover-square and so increase the library and other accommodation.

It has always seemed to me that this proposal would be less hurtful to the older societies who might with dignity acquiesce in such a change whilst objecting to be incorporated in another "society" as has been suggested. I hope, however, an opportunity may arise for discussing this proposal at the meeting of the representatives of the different societies.—I am, Sirs, yours faithfully,

FREDERICK J. MCCANN, M.D. Edin., F.R.C.S. Eng., M.R.C.P. Lond.

Curzon-street, Mayfair, W., March 6th, 1905.

TREATMENT OF PERFORATED GASTRIC AND DUODENAL ULCERS.

To the Editors of THE LANCET.

SIRS,—May I say a few words in answer to Mr. W. Bruce Clarke's letter in THE LANCET of March 4th, p. 600? The eight successful cases of perforated gastric ulcers published in THE LANCET last July were operated on 4, 5½, 10, 12, 17, 24, 24, and 48 hours after perforation. The only unsuccessful case had come about 100 miles by rail and was not seen until the third day after perforation when she was practically moribund. All the cases were treated by irrigation and suprapubic incision except one case of leaking subphrenic abscess. The fluid in the pelvis is noted as "foul" in three of the cases, "turbid" in two, and "gastric" in three. I still believe that irrigation combined with suprapubic drainage is the best way of cleansing the pelvic peritoneum and seeing that nine out of 11 cases of gastric or duodenal perforation treated in this way at St. George's Hospital have recovered I cannot allow that it is either "unnecessary" or "harmful."

I am, Sirs, yours faithfully,

G. R. TURNER.

Half Moon-street, Piccadilly, March 6th, 1905.

SCHOOL GREEK IN SOME OF ITS NATIONAL ASPECTS AND THE *VIA MEDIA*.

To the Editors of THE LANCET.

SIRS,—Dr. William Ewart in his letter which appeared in THE LANCET of March 4th, p. 599, gave cogent reasons for the retention of Greek as a necessary part of the highest medical education. Since he wrote his communication Cambridge

no less than her elder sister has decided upon the retention of Greek, so that for the present, at any rate, the matter is settled. It is probable that if Greek were given up it would not be long before the advocates of modernity would turn their attention to Latin on the plea that this is also a dead language. Latin, no less than Greek, is wont to be forgotten as years go by and it may be of interest to your readers if I quote a conversation which I overheard at a concert at Queen's Hall on Sunday afternoon. Sitting behind me were a man and a woman, the latter frankly ignorant and anxious to learn, the former no less ignorant but unaware of his ignorance. The woman remarked, "I wonder no corresponding word for 'going in' has been invented on the lines of 'exit.' I should think 'insit' might do." Whereupon the man replied, "My dear, if you knew Latin you would not say such silly things. 'Exit' means, he goes out. Exsum, exes, exit." Probably this man had had the usual school education, but because he made such an egregious blunder is it any reason that a student of science who has daily to use words derived from Latin or Greek should be deprived of the training which with a little application would enable him to use them aright?

I am, Sirs, yours faithfully,

March 6th, 1905. M.A., M.D. OXON.

THE EPIDEMIC OF TYPHOID FEVER AT LINCOLN.

(FROM OUR SPECIAL SANITARY COMMISSIONER.)

(*Continued from p. 604.*)

Lincoln, March 6th.

THERE can be no doubt as to the prevalence of a wholesome feeling of discontent throughout Lincoln. This may be productive of great good if its strength is not divided and diverted into different directions by party politics. The feeling that the town has been misgoverned is widespread and this again would be very fruitful if the electors could bring themselves to realise that this is as much their own fault as the fault of those whom they elected. For instance, the most general complaint is that no timely warning was given and the people were only called upon to boil their water when it was much too late and several hundred persons had entered upon the period of incubation. This is true as a matter of fact but as a matter of policy there is another point of view. So late as the year 1903 as many as 32 cases of typhoid fever were notified and yet no epidemic ensued. On the contrary, during the following year up to the month of October only six cases were notified. Then there occurred the one solitary case on Dec. 2nd. It happened, however, that from Dec. 22nd to 31st there were ten more cases; still, and even then, there were only 17 cases in all for the entire year and this is but a small figure. The suspicious feature about it is the fact that the last ten cases came close one upon the other. With the month of January matters became still more threatening; nevertheless, up to Jan. 23rd there were only 18 more cases. The town council was not absolutely asleep or indifferent. On Jan. 2nd it had sent samples of the water to the Clinical Research Association in London for examination. The reply was not received till Jan. 18th and it is now said that the corporation should not have waited but should have warned the people at once. Of course, all sanitarians would agree with such a principle and urge that the moment there is suspicion of danger and without waiting for analyses and lengthy bacteriological examinations, clear, emphatic warnings should be issued and full precautions should be taken. Therefore when the authorities felt sufficiently alarmed to send samples of water to be analysed—that is to say, on Jan. 2nd last—they should have issued warnings. As it is, they waited till they knew the result of the analyses—that is, till Jan. 18th, and then on the next day issued 13,000 handbills warning the population.

Supposing, however, that warnings were published from the very first, what would have been the position of the corporation if no epidemic had ensued? Undoubtedly the outcry and the dissatisfaction resulting would have been loud and keen. The corporation would have been denounced as mischievous alarmists who had driven the visitors and the trade from the city. But the most peculiar part about the matter is that the more successful the efforts of the corporation the more certain and the more virulent would be the abuse that they would call down upon themselves. Thus, if it is possible—and this is very doubtful—to issue warnings in such good time as completely to prevent any cases of typhoid fever occurring, then assuredly the corporation would be violently blamed for raising a false alarm. It is only in the event of the warnings coming too late to prevent the mischief that the corporation could hope to escape blame for creating unnecessary alarm. This obvious but disconcerting fact clearly shows that the authorities are placed in a false position and exposed to a cross-fire of criticism from which there is no escape. The cause is the conflict of interests. If the protection of public health was the only duty and object of the corporation the matter would be simple. But, as a rule, and when there is no startling epidemic to alarm the population, the elector thinks a great deal more about saving the rates and promoting trade than he does about the problems of water-supply, drainage, disposal of refuse, prevention of jerry-building, and kindred sanitary questions. It is for the purpose of saving the rates and avoiding any sort of action that may alarm and drive away trade that corporations blunder into epidemics. The people only perceive when it is too late that in the long run they have lost more than the cost of taking proper measures in good time. Will this lesson be effective at Lincoln? Will the inhabitants insist that before the interests of local trade and the reduction of taxation stands the question of public health; that the preservation of public health, however expensive at first, is in reality the truest of all economies.

In thus seeking to preserve the public health what will have to be done besides securing a pure water-supply? Looking at the distribution of the cases over the town and noting which are the streets and districts principally affected, there is some reason to believe that it will be necessary to take in hand the question of sewer ventilation. Lincoln for the most part drains into small pipe sewers. These were laid down on the understanding that the separate system would be adopted. As a matter of fact, however, the sewers not only receive the sewage proper from the soil-pipes of the houses and the slops from the kitchen sinks but a very large amount of rain water from the backyards, the back portion of the roofs of the houses, and also used water from tan-yards and other industries. Thus there is more sewage in bulk than was intended in the first instance and, in consequence of the various industries, it is a more concentrated sewage than would have been the case had it been limited to domestic drainage. It is only the rain water that falls on the fronts of the houses and in the streets that does not penetrate into the sewers but flows along gutters and surface drains to the nearest water course. As already mentioned, there is no natural outfall for the sewers. By gravitation, and in some places the fall of the sewers is very slight, the sewage reaches a pumping station situated close to the city. Here there is a receiving tank and as the main sewer approaches the pumping station it is enlarged so as to form a sort of reservoir, where the sewage can accumulate till the pump is able to lift it and to send it on to the sewage farm which is further away from the city. But it is not a very large amount of sewage that can accumulate at the pumping station and its immediate vicinity. There is not space, for instance, for 100,000 gallons and when that amount or more is waiting to be lifted on to the sewage farm then it must flow backwards towards the town. In a word, the sewers become waterlogged. Consequently, the question arises whether any extra pressure of this description, affecting the internal condition of the sewers and driving an extra amount of sewer air out into the town, occurred before the outbreak of the present epidemic. As every gallon of sewage has to be lifted by a steam pump and every stroke of the pump raises the same volume of water the actual amount lifted is known most accurately. For the year ending March 2nd, 1902, the average amount of sewage lifted per week was 8,983,942 gallons. For the year ending March 31st, 1903, the weekly average was 8,799,693 gallons; but for the year ending March 31st, 1904, the weekly average was 10,706,731 gallons. This is a daily increase of nearly 300,000 gallons. Much more air, therefore, must have been forced back into the city and yet we are told in the city surveyor's report for that year that in various parts of Lincoln there were 218 ventilating pipes in connexion with the main sewers attached to private property, and that of this number one had been erected during the course of the year. While, as compared with the previous

year, about 90,000,000 more gallons of sewage filled the sewers and forced the sewer air out, there was only one single addition made to that form of ventilating which consists of pipes running up the sides of private houses. Judging from such figures it does not seem as if increased facility for ventilation had been provided to meet the increased necessity for such ventilation.

When an epidemic is in progress the local officials are so overwhelmed with work that it is difficult to obtain minute information. In spite of this, however, everyone was most anxious to help my investigations and I have to express my gratitude to the medical officer of health, the assistant medical officer of health, the city surveyor, and the clerks in the corporation offices for their courtesy and patience, though I persisted for hours together in studying their maps and figures. Still, I felt that while the officials were busy in providing for the urgent needs of patients actually suffering I could not be too sparing in the questions put to them, considering the amount of time that would be absorbed by answering these questions. Thus, for instance, I have not obtained complete statistics as to the amount of sewage in the sewers during the whole time of the epidemic. Still, I did ascertain that during the week ending Nov. 13th last the engine at the pumping station had to lift out of the sewers and to send on to the sewage farm 8,200,000 gallons of sewage. The next week ending Nov. 20th there were 9,600,000 gallons. I do not give the odd figures. On Nov 27th there was a further increase to 10,500,000 gallons. On Dec. 4th the amount was above the average—namely, 10,770,000 gallons, while for the two following weeks, those ending on Dec. 11th and 18th, there was a much greater increase—namely, 11,430,000 gallons and 12,900,000 gallons. Indeed, it is admitted that there was an increase over the normal quantity of sewage equal to about 25 per cent. for a few weeks preceding the epidemic. If, therefore, by forcing out of the sewers a larger amount of air than usual a greater predisposition to typhoid fever is created the statistics derived from the pumping station at Lincoln are quite in keeping with such a theory. There was extra pressure for some weeks before the commencement of the epidemic. During that time the sewers were water-logged to a larger extent than usual. Of course, it must be borne in mind that the difficulty rests not so much in regard to the volume of sewage but in the fact that the greater part of it comes in the morning and the amount of work done in pumping is not evenly distributed over the whole day. If this were so, taking the last and highest annual figures given they amount to a daily average of 1,529,533 gallons and this is only 64,000 for each of the 24 hours. The pump can easily lift 100,000 gallons in an hour. But that is not the way sewage comes. Even when it is not influenced by rain the greater part flows at special times and not all the time, and this it is that causes the accumulations in the sewers.

There is not only the general question of forcing air out of the sewers by the accumulation of water in the sewers, but it is necessary to study with even greater care the places where that air escapes and the connexion such escape may have with the actual cases of disease. If it can be shown that those localities where the greatest quantity of air escapes from the sewers have suffered more than those localities not so affected the case will be much stronger. It is possible, however, to go even further than this and to compare not only locality with locality, street with street, but house with house.

Such an investigation would take much time and require a very intimate knowledge of minute details. Nevertheless, and though as yet much still remains to be seen and examined, the results already attained are certainly interesting and suggestive. Perhaps the most characteristic district is that already mentioned which, though inhabited by the lowest and poorest class, has been remarkably free from typhoid fever. This district is bounded on the south by the river Witham, on the east by the railway to Grimsby and Hull, and I would take Montague-street for its western limit. Within these limitations is comprised about a third of the river embankment known as Waterside North. Here the main collector passes and there have been ten cases of fever but it is not easy to ascertain how many of these occurred in the smaller portion of the embankment that forms the southern boundary of the district now described. Then Croft-street and its continuation, known as Winn-street, may be taken for its northern boundary and these streets run, of course, from east to west. Towards the eastern end of this district there is a syphon which passes under the river Witham and conveys the sewage of the northern half of the town to the pumping station which is but a short distance on the other side of the river. The district in question is the most thickly populated part that is near the pumping station. It is also the lowest-lying district and when there is more sewage at the pumping station than the pump can lift it is the sewers of this district that are the first to be water-logged. The ordnance map gives the level of the lowest part of the water-side embankment at 15 feet; this is at its eastern extremity. It then rises to 16 feet and attains 18 feet at Montague-street which is the western extremity. Going to the northern line where Croft-street traverses Montague-street the level is 23 feet and going eastward the level falls to 20·9 feet at the beginning of Winn-street and then this street ascends slightly, being 22·4 feet a little further eastwards. In a word, the rise in the district in question is from five to seven or eight feet, so that it is comparatively flat. Here is the district which has not suffered much from typhoid fever. Being nearest to the river it was inhabited early and the older property has degenerated and is now tenanted by the poorest classes. Immediately north another district of about the same size is of more recent creation and has a much better class of inhabitants. The northern frontier of the former district would constitute the southern boundary of this second district, the east and west would be likewise bounded by the railway and by Montague-street, and the northern demarcation line would be Monks-road. Here at the top of Montague-street the level is 58 feet—a rise from Croft-street of 31 feet. At the top of Baggolme-road the level is 49 feet and just below where Croft-street merges into Winn-street the level is 20·7 feet. Further eastwards the rise is from 22 to 45 feet. Therefore, the rise in this district varies from 23 to 31 feet. Indeed, this is the beginning of the hill that leads up to the cathedral.

The record of the cases of typhoid fever is not as yet absolutely accurate in regard to their topographical disposition. Though some omissions may have been made and some corrections will be necessary the general bearing of the facts will remain about the same. For the lower district described above there are recorded 30 cases, but of these ten cases occurred in Cannon-street and seven in Winn-street, others in Lord-street and Eastfield-street; in fact, a good two-thirds of the cases are located in the upper half of the lower district. Then going over to the higher and better-class district I found 39 cases. Thus, where the houses are not more than five feet above the river level there seem to have been only about ten cases, in which I include four out of the ten cases occurring on the lengthy embankment called Waterside North. On the other hand, in the houses standing on ground that is from six feet to 40 feet above the waterside level there were some 50 cases; and the higher above and the further from the river the better the class of property. These better-class houses are inhabited by the more prosperous section of the artisan class and by members of the small trading class. Whereas the property near the water is inhabited by hawkers, beggars, and tramps, yet it is these who have suffered least, though they all drink the same water.

To explain this difference, this unexpected susceptibility of those who enjoy what at first sight appears to be better sanitary conditions, it would be necessary to trace the course followed by the sewer gases as they are forced out of the water-logged sewers. The pressure being from below and the air being warmed in winter, because the sewer is warmer than the street, the tendency of the sewer air would be to travel upwards. The ventilating pipes and the manholes in the streets on the lowest levels cannot act as ventilators when the sewer is water-logged. There is no open space for them to ventilate since the sewer below them is full. Ventilation is then only possible at the higher levels and the question to be solved is whether the houses where the greater number of cases have occurred received more than what might be described as their fair share of deleterious atmosphere pumped out upon them from the sewers. What I have seen certainly helps to bear out this suggestion. In Winn-street I visited three houses standing side by side. There had been no case in the middle house and here at the back a pipe sewer ventilator went up to the roof. The north and north-easterly winds which prevailed just before the epidemic began would encounter the air as it came out of this ventilator and blow it into the window of the next house where there had been a case of typhoid fever. While this may be noted at the back of the house it should be observed that there is

also a manhole over the sewer just in front of the house. In the third house there had been two cases of typhoid fever and two cases of scarlet fever. At the back there was another sewer ventilating pipe, but what was particularly significant is the fact that this pipe had been broken off at the top. Instead of being carried upon and above the roof of the house the pipe abutted immediately under the ledge of the roof. The air coming out of this pipe would therefore strike the ledge of the roof and would be deflected downwards. Following the wall the sewer air would reach the upper portion of the two windows of the two bedrooms situated on each side of the pipe. The mouth of the pipe was not more than two feet or so from these windows and it was precisely those persons who slept in the two rooms thus exposed to the invasion of sewer air who fell ill with typhoid fever and with scarlet fever.

In the Monks-road I found another equally significant combination of circumstances. Here in a very pleasant looking villa close to the park and well situated on the wide road there have been two cases. The first was that of a young lady whose bedroom window overlooked the road manhole. Such bad odours escaped from this manhole that the inhabitants of the house often poured down bucketfuls of disinfectants in the hope of reducing the nuisance. The lady's brother was the second to fall ill from typhoid fever. His bedroom window was round the corner of the villa overlooking the side street. Immediately by his window a sewer ventilating pipe goes up to the roof of the house. No odour, I was told, had been noticed coming down from the roof but there is a joint in the pipe about five feet above the ground. There was no lead or cement in this joint and the two pieces of the cast-iron ventilating pipe fitted so badly that the sewer air came out freely. The odour could easily be detected. It blew into the side door which was close by and thence into the pantry where the food is kept, or else it ascended up to the window of the room immediately above. It was in this room that the brother who contracted the fever was in the habit of sleeping. Several other houses where there had been cases of typhoid fever were also especially subject to receive air escaping from the sewer but of course there has not been time yet to go into this matter thoroughly. Still, and though these incidental cases must not be taken as conclusive, they do suggest a possible connexion between the escape of sewer air and the greater prevalence of fever in certain districts, streets, and houses. If that can be more conclusively demonstrated than is possible in this preliminary examination of local conditions then we have yet another proof that the ventilation of sewers is, generally speaking, a question that has not been satisfactorily solved. At Lincoln as much attention has been devoted to this matter as in most other towns and yet the present state of affairs seems fraught with no inconsiderable danger.

TUBERCULOSIS IN FRANCE.

(FROM A SPECIAL CORRESPONDENT.)

L'Œuvre des Enfants Tuberculeux.

IN view of the International Congress against Tuberculosis to be held in Paris next October English readers may be interested to become acquainted in advance with L'Œuvre des Enfants Tuberculeux. This popular society, having for its object the free treatment under ideal conditions of tuberculous children, was founded under its modest title in 1888, when a country residence at Ormesson, 26 kilometres outside Paris, was given for the purpose and was opened to receive 12 patients. In 1894 it received the well-recognised distinction of being officially declared to be of public utility. The moving spirit of the movement has been Dr. Léon-Petit, its secretary-general; but its list of supporters, members of committee, and past presidents include Dr. Brouardel, senior French representative at the London Congress; Dr. Hérard, President-elect of the coming Congress in Paris; Dr. Hutinel, professor of pathology; Dr. Blache, its late president, and Dr. Graucher from the medical profession; M. Jules Simon, M. Georges Picot, M. Casimir Périer, and M. Emile Loubet from the world of literature and politics, and a considerable number of well-known names belonging to the old French aristocracy. At the annual meeting held on Feb. 9th the Agricultural Hall of Paris was packed full of the society's supporters, most by appearance of the *bourgeoisie*, who stood for hours in the doorways and stairways listening to the speeches, which lasted two hours, before they could be rewarded with a first-rate programme of music and recitation provided by popular actresses and platform musicians. To English minds, accustomed to Mansion House meetings and charitable funds on a vast scale, a national work spending under £8000 in the year on 400 tuberculous children would hardly seem likely to present any very thrilling interest. But organised philanthropy is still in its infancy in France and in philanthropy, as in everything else, the Frenchman makes the most of what he is spending and the meeting was an enthusiastic success. The visit to the hospitals here described was kindly arranged in special honour of the visitor who was received a couple of days later at the station of Villiers-sur-Marne by Dr. Vaquier, the physician in charge, who is also allowed to engage in private practice. Villiers is 21 kilometres out of Paris from the Gare de l'Est, and standing high it commands a fine distant view of the city, embedded away to the west towards late afternoon in the golden haze of a wintry sunset. The three hospitals of this society all lie within a few miles of each other to the E.S.E. of Paris. The most recent, that at Noisy-le-Grand, which is passed in the train, was opened only two years ago for girls of from three to 10 years of age. The first at Ormesson has about 100 beds for small boys from three to ten, while that at Villiers has nearer 200 for boys from 10 to 16 years of age. All alike are managed by religious sisters of Sainte-Anne, women devoted to the work although devoid of any previous systematic professional training, but the older boys at Villiers are managed as regards discipline and education by men of similar standing to board school masters.

The small boys' hospital, or sanatorium as we should call it, at Ormesson is centred round a country house given for the purpose in 1888. This is now used by the seven or eight sisters who control the whole management and do most of the menial work themselves. On one side there has been added a fine, lofty, and spacious dining hall, with kitchens at the end and long windows down either side. A hundred little boys were standing in blue smocks beside two long tables and as the sister gave the command by a wooden clapper they recited a grace, crossed themselves, and sat down to their afternoon milk. Children of any creed or race are received without distinction; but as there is a bright little Roman Catholic chapel and the discipline is in the hands of *religieuses* it is probable that all have to conform for the time to Roman Catholic practice. The dining hall looked bright, clean, and airy but there is a great objection to the French windows, which open down their whole length or not at all, insomuch that during most of the year the children sit with closed windows. Hot air is certainly admitted freely but its freshness is always open to suspicion, even if it does drive out the stale air through the outlets designed for the purpose in the roof. This appears to be a radical defect in house construction throughout France and above all in houses intended for the treatment of pulmonary tuberculosis. From the central building are also built out at either side two long, spacious dormitories, floored in wooden parquet and equipped with nothing but simply furnished beds and a few chairs; while at the end are the lavatories, baths, and water-closets without wooden seats; small sleeping rooms for the sisters in charge; a room at each end for isolation of infectious cases, for instance, of measles or scarlet fever, which have hitherto been here successfully isolated; and along the southern face of each dormitory runs an open, flagged verandah. Finally, this southern face is completed by a fine, lofty hall, built up against the original house; floored in linoleum, with tiled and painted walls and rounded corners, equipped with low benches and a few long chairs for invalids, and used as a playroom in all weathers. The grounds to an English eye are dull and uninteresting, with long stretches of rough gravel and no signs of swings or games. At the entrance is a pavilion in which relatives and friends are received and where they can see the children.

The big boys' hospital at Villiers is now a considerably larger affair. Based on a house belonging to M. Bonjean who took in ten waifs in 1891, it was enlarged by a couple of wings to take in 40 tuberculous children in 1892. In 1893 £5000 from the Pari-Mutuel enabled the society to build a hospital ward and gallery and by an extensive popular subscription, entitled "Les Enfants de France," a new pavilion of large dimensions was inaugurated by M. Faure in 1896

and dedicated to the memory of Villencia, the military surgeon who described the contagious nature of phthisis and who is celebrated by a bust in the courtyard of Val-de-Grâce as also by a good statue in the hall at Villiers. The names of the chief donors amongst the 12,000 subscribers are set out in detail on the wall of the staircase. Finally, there have just been completed the workshops for making clothes and boots and the long covered playroom on one flank of the building and on the other the workrooms, laundry, and machine-house in which a gas engine runs a dynamo and pumps water for the establishment. Owing to the workshops the staff of sisters here numbers 25.

The Pavillon des Enfants de France is certainly of a remarkably original and interesting design. It is built in two floors—ground floor and gallery—round a large, open, central space. The gallery is of light iron and wood construction and the whole impression is like that of a museum, the place of the cases being taken by very frigid-looking beds or in the central, slightly sunken well by a few stiff chairs and tables. The building measures some 120 feet by 70 feet and is nearly 60 feet high, with a half-glazed roof and English sash windows all the way round on both floors. The beds were ranged mathematically round the gallery and round the outer region under the gallery on the ground floor. At the corners were windowed cubicles for the *surveillants*. On both floors were doors opening into lavatories, bathrooms (three baths to each floor), and dressing rooms. This pavilion is used as a sleeping room only at night. Patients confined to bed are retained in the older dormitory, which is more like an ordinary hospital ward, with a closed gallery along one side, where they can be quieter and can be attended to by one of the sisters. Round the house is a good garden on which some care has been expended to asphalt the paths and to keep down the dust in summer. It is difficult to say, at least without spending some time as an inmate, if any advantage is gained by a large, open pavilion such as this at Villiers. Given English windows and the recognised English demand for fresh air, it is probable that tuberculosis may be as well treated in a bedroom or ordinary ward as in any of special size or design. The French public, however, even more than the English, have a rooted aversion to cold air, preferring hot and stale at all costs. If the windows, then, are of French design or if, being on the sash principle, they are kept closed throughout the night, there is some real excuse for the eccentric design of the Pavillon des Infants de France. As to artistic merits, the worker in English hospitals is completely spoiled for any appreciation of French wards. The religious sister, the *surveillant*, the *infirmier*, all alike seem to work by hard and unbending rule of thumb. The discipline appeared rigid; there were no signs of spontaneous gaiety amongst the children who appeared to be essentially at school; in no ward apparently was there a piano, or picture, or note of decoration, and there were no cushions or ribbons, no flowers, and no toys. If the womanly touches, familiar to our English wards, despite the alleged professionalism of our nurses, be thus absent, surely there must be a corresponding lack of that sympathy which at all ages is a strong power for good and in childhood is one of the most important factors in any treatment.

The general stay of a child in hospital is from two to six months. Many stay for longer, some for years; but it is best to send them back if possible within half a year, for after that length of absence the parents become unwilling to take them home at all. The numbers treated were, in 1903 for instance, at Ormesson 167, Villiers 149, and Noisy-le-Grand 79, total 395. Their average stay in hospital was 71 days; and the general result of several years past has been a mortality of 10 per cent. and an apparent recovery rate of from 25 to 27 per cent. Cases are admitted by recommendation of the family medical adviser, declaring the existence of pulmonary tuberculosis, corroborated by examination at the hands of a medical admission-committee and by a domiciliary visit paid by female inspectors. The year's expenses include £800 invested; £2000 for central stores, drugs, and shops; £1300 for dispensary and offices in Paris; £900 for Ormesson; £2000 for Villiers; £1100 for Noisy; and £250 for a new extinct sanitary colony at Trénilly; total, £8600. The upkeep of a bed is quoted at £20 a year. Any subscriptions from 8*s.* a year upwards qualify for membership of the society of varying grade.

Le Dispensaire Antituberculeux Emile Roux de Lille.

An English visitor to Paris may well stop on his way through Lille and see M. Calmette's antituberculous dispensary as a type of work which has a future before it of the very first importance. There is a Fédération des Œuvres Antituberculeuses Françaises, the monthly organ of which, entitled *La Lutte Antituberculeuse*, gives from time to time most excellent accounts of the theory and practice of these dispensaries, but a few brief notes may not be out of place in the pages of THE LANCET, to follow the account given of sanatoriums on the ordinary plan at Bligny, Ormesson, and de Villiers. The principle may be briefly stated. Tubercle kills 150,000 Frenchmen every year, a population equal to that of Rouen or Nantes; the friendly societies spend £160,000 a year on 75,000 cases of tubercle; £8,000,000 would be required to build and £3,000,000 yearly to maintain the sanatoriums required for their treatment. And the treatment is long, doubtful, and unacceptable to most working people. Without in any way underestimating the value of sanatorium treatment as the ideal, especially for curable cases, the present movement has as its object to initiate dispensaries in the towns as the indispensable adjunct of the sanatoriums. Its essential aim is not that of charity, to supply medical advice and to distribute drugs or doles, but rather that of national economy, to save to the State as many working lives and working days as possible. The dispensary is the ideal antituberculous school for adults. It seeks, therefore, to find out all cases of poor consumptives, to attract them and to keep control of them, to understand their local conditions, to advise them either to apply for sanatorium or other hospital treatment for themselves or at least to take steps to prevent the spread of infection; and for these ends to give them material assistance in the unequal struggle with disease in which they find themselves placed through no fault of their own. Lille is chosen as a sample of a great industrial city in which, out of a population of 220,000 persons, there are 6000 poor consumptives, of whom from 1000 to 1200 die every year.

The precise method employed at the dispensary is as follows. A new case is received from 4 to 6 on any week-day evening and from 9 to 11 any Sunday morning, and is given a card for consultation on a particular day at a particular time, so as to avoid his being kept waiting, together with a pocket spittoon in which he is to bring a specimen of his sputum. At the appointed time he is seen by the medical director or one of his three assistants, who makes a thorough physical examination and verbal investigation of the case and registers the details on his clinical history sheet (*dossier*) with a minute account of his family history, habits, and surroundings. If there is no suspicion of tubercle the patient is discharged. If, however, tubercle is diagnosed or suspected he is given a carefully worded pamphlet (which is fully explained to him) of instructions as to the precautions to be taken and his own interest in the matter; he is supplied with pocket and table spittoons and a litre of lysol and is told when to come for a second visit. The next step taken by the dispensary is the personal inquiry by a working man. It is recognised that none but a working man can fully be received as his equal by a working man or can be expected to find out the exact conditions of his life or to enter fully into his difficulties in suggesting plans for its amendment. A working man, M. Haenjens, has therefore been engaged by the dispensary, himself formerly a woolcomber and secretary of a benefit society, who speaks both Flemish and French and has been thoroughly trained in the principles of domestic sanitation and the fight against tubercle. He now pays a visit to the home of the patient and is usually able, with a hearty welcome, to confirm, to enlarge, or to modify the report already given as to his hygienic, financial, and general surroundings, both at home and in his workshop. On this double report, the *dossier clinique* and *dossier ouvrier*, the director of the dispensary decides as to the measures to be adopted. From 50 to 60 families have their soiled linen disinfected and washed in the special laundry of the dispensary every week. The patient's room, if assent is obtained, is thoroughly disinfected, stripped of its paper, and washed from time to time; if necessary, he is provided with a weekly payment for a fresh lodging. Through the dispensary he may be furnished by the charitable with bed and clothing and some 120 are in receipt of daily outdoor relief in the shape of orders on local providers for—to take instances at random from the order-book—30 litres of milk for the month, a month's lodging, or supplies of eggs, meat, or coal. Some are given warm douches every day; some are relieved of the care of their children, who are billeted out on other families or sent to the sea sanatorium at Luydcoote, near Dunkerque. This

year it is hoped to send a few select and curable cases with their families to small, healthy houses, especially built for the purpose, out in the woodland and the country air.

The Emile Roux dispensary at Lille was founded in 1901 as the result of a public subscription, doubled by a vote of the municipality, which also provided an admirable site in the Boulevard Louis XIV., where it is now almost hidden between the imposing Pasteur Institute on the one side and the city walls on the other. It is essentially, as desired, in the poor and industrial quarter of the town. It is simply built—a one-floored building measuring 42 by 35 feet besides annexe—with ample accommodation for a large out-patient attendance, every attention being paid to the requirements of light, air, and cleanliness. Out of a good-sized waiting hall there opens on one side the office of the workman-inspector; on another side are a couple of medical consulting rooms with a dark room and a clinical laboratory for examination of sputa; on the third side are an office where all registers are kept and a passage leading to a glass-roofed hall where patients are accustomed to the use of a long chair and are taught breathing exercises. Beyond this is an annexe, including the douches, laundry, and drying rooms, and a room for the receipt, sterilisation, and distribution of milk. The total cost of building and equipment was £1440.

The information thus being collected is of considerable importance and interest. Of 592 patients examined in a year 261 were suspected of tubercle, 144 male and 117 female, 81 and 86 respectively being between the ages of 20 and 40 years. In the first three years during which the dispensary was open, 1901–03, 780 cases were diagnosed as tuberculous; most occurred in the months from February to July and least (5 per cent.) in the month of January. The first six decades of life contributed respectively 9, 129, 271, 238, 105, and 26 cases, five only being diagnosed in persons over 60 years of age. The majority belong to the textile or clothing industries; and come from the most crowded and least airy quarters of the city. Physical overwork, according to a recognised criterion, was found in 98·22 per cent., insufficient feeding in 71·26 per cent., alcoholism in 15·32 per cent., defective sanitation of workshops in 16·09 per cent., tuberculous parentage in 20·68 per cent., other tuberculous relationship in 19·54 per cent., and contagion only in 9·19 per cent., being two cases in public life and 22 in marriage. Most live in small rooms, in overcrowded rooms, or in rooms with only one window or skylight. Of the 152 invalids receiving material assistance on an average for six months in 1903, 51 increased in weight an average of eight pounds, 38 remained stationary, and 63 diminished an average of five and half pounds. For medical results, 17·76 per cent. are returned as improved, 25·65 as stationary, 19·73 as aggravated, and 36·84 as dead.

The cost of the establishment is comparatively slight. The medical service, including the director, costs £126; inquiries and sanitation of rooms, £84; cleaning and administration, £90; laundry, £64; spittoons, £13; with other general expenses amounting to a total of £550. The material assistance to 347 families in 1903 amounted to £966, including £360 for milk, £284 for eggs, £160 for meat, £80 each for coal and lodging, and £18 for sending children to the sanatorium. The total cost of the dispensary, therefore, for the year was 37,850 francs, or £1514, or roughly £10 for each invalid and his surroundings. It may be objected at first that the material assistance is in danger of pauperising the invalids, and this will undoubtedly be the case if proper care is not taken. But the essential object of this material help is to attract and to keep in touch with the adult pupils of this anti-tuberculous school, and, consistent with the attainment of this object, it rests with the director and, above all, with the workman-inspector to see that the funds are used to good advantage. The essence of the system, in fact, is the workman-inspector, and considering how easy it is in England to find men of this class coming forward to pass the examinations of the Royal Sanitary Institute and to compete for the position of sanitary inspector there should be every hope of the system being adopted with good effect in some of our large English cities. Dr. A. Newsholme and others have decided that the great work of a sanatorium for tuberculosis is to train its inmates for their future life at home. This training needs to be confirmed, continued, supervised, extended, or supplemented by some such institution as the antituberculous dispensaries of France and Belgium, of which a most notable example is afforded by that under the guidance of Dr. Calmette at Lille.

BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

University Intelligence.

Mr. Jordan Lloyd, professor of operative surgery, has been elected to represent the Faculty of Medicine upon the Council of the University, *vice* Professor H. G. Barling who as Dean of the Faculty is *ex officio* a member of the Council.—The Huxley lecture this year will be delivered on Thursday, March 23rd, by Professor E. B. Poulton, M.A., F.R.S., of the University of Oxford.

Mentally and Physically Defective Children.

The school accommodation for mentally and physically defective children was considered at the last meeting of the Birmingham education committee. Mrs. Hume Pinsent presented the report of the special schools subcommittee, from which I gather that there are about 1000 mentally defective children in the city, less than half of whom are receiving instruction in special classes. Excluding feeble-minded cripples, who are not eligible for any school in Birmingham, it is estimated that school accommodation should be provided for 600 feeble-minded children, whereas at present there is only accommodation for a little over 300. The scheme submitted by the subcommittee further included the provision of a boarding school in order to organise and to complete the work done for defectives. It was pointed out that the industrial homes for the feeble-minded which are about to be erected by the Poor-law guardians will be incomplete without some such boarding school. It was stated that the effect of adopting the scheme would be that an adequate education would be given to 1000 feeble-minded children at an annual cost of £10,000 instead of, at present, an inadequate education to 500 at an annual cost of £3400. In the discussion which followed most of the speakers were in favour of the scheme and the report was finally approved, with the exception, however, of that part relating to the boarding school.

Increase of Lunacy.

Councillor Davis, the chairman of the lunatic asylums committee of the city council, in a recent address gave some statistics which although they were selected arbitrarily may be taken as showing that there has been a 100 per cent. increase of patients suffering from lunacy during the last 40 years in Birmingham. He expressed the opinion that drink was accountable for a greater proportion of the cases of insanity in Birmingham than in England as a whole and that drink and hereditary influence were respectively accountable in Birmingham during the quinquennial period of 1898–1902 for 17·9 per cent. and 26·8 per cent. of the admissions. He considered that in view of the large proportion of cases due to the latter cause something should be done to prevent insane patients having children.

The Unemployed.

The conference to which I referred in my last letter as shortly to be held between representatives of the city council and the three local boards of guardians was well attended. The feeling of the meeting was favourable to the acceptance of Mr. Fels's offer to lend land for the formation of a labour colony and a subcommittee was appointed to consider the details of the scheme. One of the difficulties in the way, according to one of the speakers, was that if land could not be obtained in the neighbourhood of Birmingham the authorities would either have to send out the men by railway or to provide barracks for them. Professor Muirhead of the University contributed some notes upon the conference to the press. He thought that the continental labour colonies had been a failure and that before embarking on such expensive schemes we should give a more prolonged trial to labour registries, that children should be more frequently brought up with a knowledge of some trade, and that membership of the various workmen's societies should be more universal. He expressed himself as not altogether in favour of work relief in preference to relief in food or money, since those engaged in such work were often unsuited and during the time they were at work they were prevented from seeking employment in their own trades.

Housing in Birmingham.

Some years ago certain land at Bordesley Green was acquired under the Housing of the Working Classes Act

for the purpose of erecting artisans' dwellings thereon. The scheme failed to receive the sanction of the council and it is now proposed to let out the land to private builders with the same object in view. It is said that several offers have been received and that shortly a recommendation will be made to the city council.—By the opening of Rowton House, Highgate Park, Birmingham is now possessed of a "workmen's hotel," which it is hoped will prove a boon to poor respectable single men. It is built after the style of the Rowton houses in London and sleeping accommodation is provided for 819 men. The company has a nominal capital of £50,000, all but £3000 of which has already been subscribed. The entire cost of accommodation for a day and a night is 6*d*., and including the cost of his food it is estimated that a man may live comfortably for from 9*s*. to 11*s*. per week.

Medical Charities.

The Blackwell Sanatorium, which has been undergoing alterations and additions, will soon be completed. As a result of the change there will be 20 additional beds provided. It is all the more unfortunate that this improvement should be coincident with a falling off in the subscriptions. The Birmingham General Dispensary and the Children's Hospital also report a debit balance upon the work of the last year. So great has the out-patient work become at the latter institution that the medical staff has found it necessary to limit the number of new patients to be seen to 65 per day.

A Return of Small-pox; Health of the City.

A case of small-pox was reported on Feb. 24th and on the day following it was ascertained that two other cases existed. The outbreak has been confined to one common lodging house. The usual precautions to prevent the spread of the disease were promptly taken and the patients were removed to the hospital. Apart from small-pox the general death-rate for the two last weeks of February has been very satisfactory—viz., 15·5 and 14·3 per 1000. There has been during this period a slight increase in the number of cases of scarlet fever and diphtheria. The health committee has reported upon the general statistics for 1904. The birth-rate was a low one—viz., 31·5 per 1000, against an average of 32·6 in the previous ten years. The death-rate was 19·3 per 1000, as compared with 17·2 in 1903 and 18·0 in 1902. The higher mortality rate was due to a severe epidemic of whooping-cough of a virulent type and to epidemic diarrhœa resulting from the long, warm, dry summer.

March 7th.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

The Town's Memorial to the late Sir William Mitchell Banks.

THREE months ago a public meeting[1] was held at the town hall, under the presidency of the Lord Mayor, to initiate a permanent memorial of the late Sir William Mitchell Banks. In response to the appeal made for funds to attain that object it is gratifying to record that the sum of £5523 has already been subscribed. It was agreed by the subcommittee appointed to consider the subject to found two memorials. A lectureship is to be attached to the University of Liverpool and to be called the "Mitchell Banks lectureship," to which a sum of £1500 is to be devoted. The University authorities will be enabled to invite yearly a distinguished surgeon, pathologist, or anatomist to treat of the latest investigations and discoveries in medical science. As Sir William Banks had a long and honourable association with the Royal Infirmary the committee decided to perpetuate his memory in connexion with that institution by raising a further sum of £5000 to be applied to the cost of the contemplated new out-patient department at the Royal Infirmary and associating his name with the gift. A sum of £967 has still to be raised to accomplish the committee's desire and there can be no doubt that the required amount will be forthcoming shortly, as the idea of the memorial is popular with all classes.

Low Death-rate in the City.

At the meeting of the health committee of the city council held on March 2nd Dr. E. W. Hope (the medical officer of health) alluded to the death-rate of the city for the past week, which stood at 16·4 per 1000, as the lowest on record. The decline of the death-rate appeared to be general in the city. The saving of life was most marked in respiratory diseases, tuberculosis, and zymotic diseases. It was gratifying, too, that the decline was so marked in every age-period, notwithstanding that the weather had been more severe than 12 months ago.

The King and the University of Liverpool: Gift to the Anatomical Museum.

His Majesty the King has very graciously acceded to a suggestion that the skeleton of Ambush II., the famous steeplechaser from the Royal Stables which died some weeks ago, should find a place in the Museum of Veterinary Anatomy at the University of Liverpool. His Majesty was approached on the subject by Mr. J. T. Share-Jones, veterinary anatomist to the University, who pointed out in his communication that steps were now being taken to establish an anatomical museum at the University and that it was the ambition of those at the head of the department to secure, as far as possible, objects of historical as well as anatomical interest. The skeleton will be mounted and placed in a prominent position at the University museum and a plate will be affixed giving a short history of the well-known horse. This is the first presentation that has been made to the museum but other specimens of historical interest will no doubt be received from time to time. The veterinary school was formed towards the end of last year as a necessary adjunct to the University in such a centre as Liverpool.

David Lewis Northern Hospital.

It was stated at the annual meeting of the subscribers to this charity that the debit balance now amounted to £7034. The ordinary expenditure was £10,432, while the total income was only £8457, including £1897 18*s*. from the Hospital Saturday and Sunday Fund. Efforts were made to increase the number of annual subscribers but with a very poor result. The financial condition of all the Liverpool hospitals is not at all promising.

The New Director of Cancer Research; Admission of Women Students at the Royal Infirmary.

Professor John E. Shorrock Moore, F.L.S., has been appointed director of cancer research in succession to Professor A. S. F. Grünbaum. As professor of natural history at the Royal College of Science, London, Professor Moore is well known as an investigator in cancer. He has also distinguished himself by his explorations in Central Africa. The committee of the Royal Infirmary has appointed him a member of the infirmary staff in accordance with the terms of the donation that the research work in cancer should be carried on at the Royal Infirmary. The committee of the Royal Infirmary has agreed to the principle of admitting female medical students to the practice of the hospital on the same conditions as apply to male students. By the terms of the charter of the University of Liverpool all degrees are open to women.

Infirmary Extension at Chester.

An interesting ceremony took place at Chester General Infirmary on Feb. 21st to mark the completion of extensive alterations and improvements in the out-patient department. By means of a generous gift the old dispensary and small waiting hall have given place to a roomy, well-lighted waiting hall; the consulting rooms have been improved, a new dispensary has been built, and a casualty ward provided. A copper plate is to be affixed to the new building explaining that the improvements had been effected at a cost of £500 by the trustees of the will of the late Mr. John Alexander Hay, of Cheltenham, who were authorised by the terms of the will to devote certain funds for the benefit of such charitable institutions as they should select.

March 7th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Royal Edinburgh Asylum for the Insane.

THE statutory annual meeting of the Royal Edinburgh Asylum for the Insane was held on Feb. 27th in the City Chambers, Edinburgh. The report of the ordinary managers stated that the daily average number of patients under treatment in new Craig House with the adjoining villas and at Myreside Cottage was 205 as against 207 during the preceding year. The average daily number of patients in

[1] THE LANCET, Dec. 31st, 1904, p. 1891.

the intermediate wards of the West House was 113 against 118 during the preceding year. On Dec. 31st, 1904, the total number of patients in Craig House and Myreside Cottage was 293 as compared with 295 in the previous year, while the intermediate patients numbered 104 as against 92. The private patients at the lowest rate of board numbered 53 as against 55, while the rate-paid patients numbered 464 as compared with 572 in the previous year. The total on Dec. 31st was 824 compared with 924 in the previous year. There had been a gross diminution in the average number of patients of 44, this being mainly due to the fact that the average number of rate-paid patients had declined by 41. In the course of the year 185 rate-paid patients had been transferred from Morningside Asylum to the District Asylum at Bangour. The ordinary income from all sources (exclusive of the sum of £676 8*s*. 7*d*. debited to Craig House and credited to the West House for labour performed by pauper patients) amounted to £56,807 16*s*. 4*d*. The ordinary expenditure amounted to £52,873 17*s*. 8*d*., leaving a surplus of £3933 18*s*. 8*d*. After deducting the annual instalment towards liquidation of the debt on the West House the free surplus was £1880 6*s*. 8*d*. The free surplus was applied to the reduction of debt. The report of the charity committee was also read and showed that at the close of the year the fund of the committee amounted to £9787 13*s*. 5*d*. and that the ordinary income had been £350 9*s*. 8*d*., while the ordinary expenditure had amounted to £425 17*s*. 9*d*. The number of patients relieved during the year had been 38 and the number on the roll at the close of the year was 34. The Bevan Trust Fund at the close of the year amounted to £12,830 14*s*. 4*d*. The ordinary income had been £463 10*s*. 6*d*. and the ordinary expenditure £369 5*s*. 5*d*. The number of patients relieved during the year had been 33 and the number on the roll at the close of the year was 25. The report of Dr. T. S. Clouston, the physician-superintendent, stated that in the beginning of the year the number of patients was 929 and on Dec. 31st there were 829 patients in the asylum. There were 457 admissions, 195 being men and 262 being women. The total number of patients under treatment was 1386. There were discharged 434—208 men and 226 women. There were 123 deaths—55 men and 68 women. The average number of patients resident was 872—429 men and 443 women. The report stated that the past year had been a record one in the number of admissions to the asylum. Only once before, in 1896, had there been more patients admitted within the year. The rate-paid admissions amounted to 347, or 13 less than the average of the past five years. There had been 36 more admissions of the private class than the average of the past five years. It had been many years since it was possible to admit this class so freely and it was now possible owing to the removal of 185 rate-paid patients to the new Bangour Asylum in summer which had been an enormous relief to the wards. As the accommodation provided at Bangour consisted so far of only two large wards with no single rooms and no special hospital, none but suitable cases could be sent there, leaving at Morningside a disproportionate number of the weak, the noisy, the suicidal, the epileptic, and the paralysed. On that account it had not been possible to make any reduction in the staff and the average expense of treatment went up. 12 voluntary patients had come for treatment. The proportion of recoveries in this class was much higher than among the certified. It was necessary and important that early and threatened cases of mental disease should be treated properly. There was in the Scottish Acts a vague provision for the treatment of any patient for six months with a view to cure if a medical man wrote a certificate to that effect. By means of this little known and seldom acted on provision public hospitals and parish or county councils might set up psychiatric wards or hospitals and so render what the Glasgow parish council had done strictly legal. This country was distinctly behind Germany, Denmark, and the United States in this matter. Mental disease ought now to be looked on as one of the results of breaking natural law. Men and women did not yet realise their health risks or their health duty. To see an Education Bill that made no direct provision for teaching health and an educational system which neglected the formation of self-control and character as its highest duty was the most vivid proof of the present fatuous state of mind in regard to this tremendous problem. Of the direct and exciting causes of insanity excessive drinking stood easily first. In 19 per cent. of the whole cases the excessive use of alcohol was the causal factor. This was 10 per cent. less than it had been in 1903. The past year of dull trade had diminished the alcoholic lunacy rate. The proportion of female alcoholics had been steadily increasing until last year it reached 18½ per cent. of the total female admissions. The total number of female alcoholics last year actually exceeded that of the men. The number of cases of general paralysis had been less than in the preceding years. A large number of the cases had been in women and it was a proved fact in all European classes that general paralysis was increasing among both sexes but especially among the women of the uneducated class. The recoveries had been 9 per cent. under the average, this being due to the large number of old, paralysed, and exhausted people among the admissions. The event of outstanding importance in the past year had been the commencement of the process of parting with the rate-paid patients.

The Carnegie Trust for the Universities of Scotland.

The fourth annual meeting of the Carnegie Trust for the Universities of Scotland was held on Feb. 27th in Edinburgh. The fourth annual report of the executive committee stated that under the scheme of allocation sums amounting to £38,114 12*s*. 4*d*. had been claimed and handed over during the year, making an expenditure for the two years of £58,479 12*s*. 4*d*. The grants for library purposes and for provisional assistance in teaching amounting to £6400 had been fully paid. The grants for buildings and permanent equipment available for 1904, including a balance of £12,635 unexpended in 1903, amount to £33,035. Of these the sum of £20,146 8*s*. 6*d*. has been claimed. At St. Andrews the new buildings for the departments of chemistry and of physics were approaching completion. At Dundee plans were being prepared of a further extension for the accommodation of the department of physics upon the site to which the trust contributed the grant available in 1903. The grant for 1904 had been used for the enlargement of the chemical laboratory and the grants of the three remaining years of the quinquennium were to go towards the erection of a central heating system for the various buildings of the College. The two new buildings at Glasgow for the departments of physics and of physiology, materia medica, and forensic medicine were making satisfactory progress. In Edinburgh a site had been found for the new accommodation for the departments of physics and engineering by the purchase from the town council of the land and buildings of the old city hospital. Claims for grants towards teaching endowments amounted for the year to £11,568 3*s*. 10*d*. In the case of the University of Edinburgh the committee expressed its willingness to further Sir Donald Currie's wishes, expressed in connexion with his recent gift of £25,000 to that University, that £20,000 of that amount should be applied to the establishment of a lectureship endowment fund. The committee has offered to place the income of the capital sum of £10,000 allocated to the University for teaching endowment at the disposal of the University court, to be used in conjunction with Sir Donald Currie's gift. Grants amounting to £9000 had been allocated to various extra-mural schools to be drawn on up to Dec. 31st, 1907, and under the heading of provisional assistance in teaching grants have been offered for the academic year 1904–05 amounting to £635. The scheme of endowment of post-graduate research continues to be carried on. The total expenditure under this heading amounted for the year 1903–04 to £3386 8*s*. The estimated sum for the present year amounted to £5177 10*s*. In the research laboratory of the Royal College of Physicians of Edinburgh, the purchase of which had been announced in the last annual report, steady and satisfactory work had been done in all departments. 35 workers had held places in the laboratory and had been engaged in 47 investigations. Of these 29 were graduates of the University of Edinburgh and nine held grants from the Carnegie Trust. The number of beneficiaries under the scheme for the payment of class fees had been 3075 for the winter session of 1904–05, an increase of 43 over the previous winter session. The total number of beneficiaries since the institution of the trust was 5419. The trust had paid in fees for the summer session 1904 the sum of £14,935 on behalf of 1835 students and for the winter session 1904-05 the sum of £30,871 13*s*. on behalf of 3075 students. The committee recorded with pleasure that during the year 1904 six graduates had refunded fees paid to them amounting to £84 2*s*. The report and the accounts were approved of.

Sick Children's Hospital, Aberdeen.

The twenty-eighth annual report shows that during the past year 2376 cases have been treated—724 as in-patients

and 1652 as out-patients. Of the 724 in-patients, which comprise 620 from the city and 104 from the country, 399 recovered, 116 were improved, 57 died, 79 were in the wards at the close of the year, and the balance were removed as unfit, &c. The average stay of each in-patient in 1904 was 32·8 days; in 1903 it was 31·4 days. The average number of beds occupied daily in 1904 was 74·3, compared with 74 in 1903. The average stay during the past ten years of each of the 7321 patients was 37·675 days and the average number of beds occupied was 76·12. The ordinary expenditure for the 12 months was £2850 18*s.* 8½*d.*, being an average annual expenditure per bed occupied of £38 7*s.* 5*d.*, or an average daily expenditure per patient of 2*s.* 1½*d.* The annual income amounted to £1888 13*s.* 3*d.*, or £962 5*s.* 5½*d.* short of the cost of maintenance for the year. The extraordinary income from legacies makes the actual deficit £852 5*s.* 5½*d.* The legacies received during the past two years—£1052 11*s.* 11*d.* in 1903 and £110 in 1904—afford a striking illustration of the untrustworthiness of this source of income and impel the directors yet another year to renew their appeal to the well-wishers and friends of the institution for increased giving to the ordinary channels of income, so that these might be more commensurate with its annual needs.

March 7th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Yellow Fever.

AT two consecutive meetings of the Academy of Medicine M. Chantemesse has recently discussed this important subject. On Feb. 21st he showed by the recital of some remarkable facts how the theory of the propagation of the disease by mosquitoes agrees, so far as prophylactic measures are concerned, with the conclusions arrived at by medical men of the last century after a series of patient observations. The Academy of Medicine had previously noted the forty-third parallel of N. latitude as the limit of yellow fever[1] and this is the frontier line of the habitat of the stegomyia. The prophylactic measures against yellow fever are the following: the stegomyia must be suppressed in every possible way; both sick and healthy must be protected from mosquito bites by means of masks, gloves, mosquito nets, and gauze window blinds; and all receptacles for water must be kept under surveillance and no stagnant collections allowed in which eggs may be laid or larvæ hatched. A strict watch over cargo is unnecessary except in the case of wet goods, such as moist wood, bananas, or fresh fruit. Ships coming from an infected port should be inspected especially as regards ventilation, the cook's galley, and the stokehold (*chaufferie*), or any other place where pools of water are likely to occur. If no case of yellow fever has occurred on board during the voyage free *pratique* may be granted and without any disinfecting measures being carried out. If one or two cases obviously contracted in the infected port should have developed on board and not have given rise to any others free *pratique* may again be given and no restrictions need be placed on the crew, their effects, or the cargo. If, however, infection has occurred on board precautions must be adopted. The cargo must be removed and the ship thoroughly fumigated with sulphurous acid. If the cargo in whole or in part is of such a nature as to afford shelter to mosquitoes it must be fumigated in the same way. Sailing ships will require even more careful attention than steamers. Persons suffering from yellow fever on arriving in port must be taken to hospital, but in ports where there is no lazaretto they may be sent to the ordinary hospital. Finally, M. Chantemesse is of opinion that in France at any rate yellow fever need not be considered as an infectious disease.

Wound of the Right Ventricle; Suture; Recovery.

On Feb. 15th at the Surgical Society M. Delorme read for M. Riche the notes of a case of wound of the cardiac ventricle. The patient was a woman four months pregnant who received a knife stab in the fourth left intercostal space. Two hours later M. Riche operated. He turned up a flap of the whole thickness of the chest wall, including the third, fourth, and fifth ribs, divided at the junction of bone and cartilage. He opened the pericardium, which was full of blood, and exposed the wound which was in the centre of the right ventricle. Catgut points of suture not going through the whole thickness of the cardiac wall were used, the pericardial and thoracic wounds were closed without drainage, and the patient recovered. Some weeks later she aborted.

Foreign Bodies in the Œsophagus.

At the meeting of the Society of Surgery held on Feb. 22nd M. Kirmisson read for M. d'Oelnitz an account of the case of a child, aged 14 months, who had swallowed a 50 centime piece. Radiography showed the coin lying in the œsophagus, just behind the manubrium sterni. Several attempts were made to extract the coin with Graefe's coin-catcher but in vain. Eight days later the child was brought to M. d'Oelnitz who, being acquainted with M. Kirmisson's hook,[2] made use of this instrument and easily extracted the coin. M. Kirmisson took occasion in reporting this case to express his disagreement with those who recommended œsophagotomy and who considered that the hook should only be used in recent cases. He thought that œsophagotomy was a dangerous operation in young children.

Paraplegia following Cocainisation of the Spinal Cord.

At the meeting of the same society held on Feb. 29th M. Walther showed a patient, a young man, who had been operated on some eight months previously, not by M. Walther, for degenerating synovitis of the foot. To anæsthetise him the spinal cord had been cocainised by a lumbar puncture. Three days after the operation the man complained of his legs feeling cold and heavy and on the eighth day he lost all power of movement in them. By the end of the third week he had incontinence of fæces and urine and he continued in this state for four or five months, by which time he regained control over his bladder and rectum. But still he can only move his legs slightly. These symptoms, said M. Walther in conclusion, are evidently due to a typical meningo-myelitis.

The Action of Radium upon Venoms.

At the meeting of the Academy of Sciences which was held on Feb. 27th M. Phisalix gave an account of some researches which he had just made in the laboratory of M. Chauveau. The subject of research was the action of radium upon venoms, notably those of serpents and of certain batrachians. Serpent venom, which is an albuminoid, is completely destroyed in a very few hours by the action of radium. Moreover, a solution of the venom is freed from all germs, being both microbicidal and antivenomous. The venom of the land salamander, which is alkaloidal in nature, is not affected by radium, neither is that of the toad.

Lupus of the Hand.

At the meeting of the Anatomical Society held on Feb. 27th M. Morestin showed a patient whom he had treated for lupus of the hand. The operation consisted in the removal of the skin from the index, the ring, and the little fingers. The middle finger was removed on account of its being affected with tuberculous dactylitis. The wound was covered with a graft after the Italian method. Now, at the expiration of a year after the operation, the result was very satisfactory. M. Morestin laid stress upon the benefits to be derived from a widespread clearance of affected structures in surgical operations done with a view to repair.

March 7th.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Free Supply of Milk for Out-patients of the Children's Hospital.

THE largest children's hospital in Vienna has, in connexion with the Society for the Protection of Infants (Säuglingsschutz), made arrangements for supplying a number of needy families with pure milk for the use of their infants and not long ago acquired premises for the purpose. In the midst of a densely populated district, inhabited chiefly by labourers, factory workers, and small tradesmen, a two-storey house has been built, containing proper rooms for the storage of milk and for the examination of the infants who are taken there. 250 litres of milk are daily at the disposal of the chief medical officer of the institution, sent as a gift from the dairy of the Archduchess Isabella who takes a very great interest in

[1] This is in Europe; in North America yellow fever has been observed as far north as 46·50′ N.—ED. L.

[2] See THE LANCET, Jan. 14th, p. 125.

the above-mentioned society. Suitable patients—mostly cases of rickets and catarrhal diseases of the bowels—are selected among the infants attending the hospital and receive a ticket which entitles them to a gratuitous daily supply consisting of from one to two litres of milk according to age. At the same time the mother is handed a printed leaflet explaining in popular language the main point to be attended to in bringing up the child. Every week the child is weighed at the institution and a report on his or her condition is sent to the registrar of the hospital by the matron or medical man in charge of the house. If the scheme gives favourable results some more buildings of the same kind will be erected in the localities where they are most wanted.

Medical Women in Austria.

As yet the number of female practitioners is very small in Austria and only three ladies, one of whom holds a foreign (Swiss) degree, are practising in Vienna. Five others, however, have graduated in medicine at the University of Vienna but prefer to improve their knowledge by spending a year or two in hospital practice. Up to eight weeks ago the hospital authorities have turned a deaf ear to the endeavours of these ladies to obtain appointments as dressers or junior assistants in a public hospital but they were at last obliged to give way, the consequence being that the clinics Neusser (for internal diseases) and Schauta (for obstetrics and gynæcology) have each one female junior assistant with all the rights and duties of their male colleagues. In the governmental order allowing the appointment of ladies their eligibility for chairs at the University clinics was also emphasised, thus clearing away all obstacles from their path. In the southern provinces of Austria-Hungary, in Herzegovina and Bosnia, where 60 per cent. of the inhabitants are Mussulmans and female practitioners are consequently in demand, 19 ladies appointed by the Government are acting as district surgeons and are very popular with their patients who are for the most part the inmates of the harems.

The New General Hospital in Vienna.

The site of the Vienna General Hospital has not undergone any enlargement during the last 125 years, although the requirements of modern medicine have necessitated extraordinary changes in the old structure. Space had to be found for 2500 beds and nearly 1800 students had to be packed in small lecture rooms and operating theatres. At last the Government found it impossible to defer any longer the erection of appropriate buildings "devoted to the welfare of the sick and the study of diseases." An area of about 250,000 square yards has been obtained for this purpose in close proximity to the old hospital so well known to all English medical men who have visited Vienna. The intention is to construct the hospital on the pavilion system, each clinic being a separate building with every convenience for scientific research. The institution is expected to be finished in 1909 and will contain three internal surgical clinics; two for ophthalmology, otology, rhinology, dermatology, and obstetrics; one for syphilis and x ray work, for pathological anatomy, and for chemistry; and in addition a department for serum therapeutics. Ample accommodation for baths, reference libraries, and the like will, of course, be included. The total cost is estimated at £1,800,000. Two clinics, the gynæcological and a surgical one, are already in course of construction and will be finished by the end of 1905.

Alcohol and Crime.

The *Imperial Sanitary Gazette* (*Reichs-Sanitätsblatt*) contains an interesting account of the effects of the abuse of alcohol, which was quoted at the last meeting of the Society of Medical Practitioners. The wilful injuries brought to the notice of the police in the province of Lower Austria have been tabulated with reference to the day of the week on which they were inflicted and the results have come out as follows: 62 on Thursday, 48 on Friday, 103 on Saturday, 254 on Sunday, 125 on Monday, 69 on Tuesday, and 62 on Wednesday. These figures are the mean average for one year. The responsible agent is at once seen to be alcohol. On Sundays, when the public-houses are most frequented, the greatest number of injuries is inflicted; on Monday the public are still under the influence of drink; and Saturday, when wages are paid, is relatively the most dangerous day, for although the men do not leave work till after 6 P.M. the few evening hours are responsible for a high percentage of crimes of violence. The society has ordered the discussion which followed the quoting of the paper to be printed and distributed amongst workmen.

March 1st.

EGYPT.

(FROM OUR OWN CORRESPONDENT.)

The Budget for 1905.

As a result of the Anglo-French Convention of last year the Egyptian Government is no longer forced to raise £200 in taxation every time it wishes to spend £100 in excess of the annual expenditure authorised by the European Powers. The "Caisse de la Dette Publique" still survives to watch over the interests of the bondholders but it will automatically disappear in 1912 when the last of the public debts is paid off or converted. The Egyptian Government is now financially a free agent, except as regards the restrictions of the capitulations and those connected with its borrowing power. Besides regaining the disposal of her own revenues Egypt now gets an addition of nearly £7,000,000 to the Reserve Fund and a decrease of annual expenditure equivalent to an increase of revenue of £270,000. This is the first time for half a century that the Government has had any spare money in its coffers, the last time having been when Said Pasha came to the throne and found more than a million in the Treasury at Abbasiyeh, besides a much greater sum outstanding in uncollected taxes. Mr. Vincent Corbett, the new financial adviser, in his note on the Budget reminds us that the increase in prosperity of this country by leaps and bounds is chiefly due to the enormous returns resulting from the cultivation of cotton, the crop of which has doubled in value during the last six years. "Stable Government, security of life and property, impartial administration of the law, fiscal reform, and the introduction of foreign capital have all had their share in promoting the economic development of Egypt," and to these must be added the wise efforts of the English officials to remit taxation wherever it pressed most hardly on the poorer classes. Since England has occupied Egypt there has been a permanent remission of taxation of more than £1,600,000 a year and this year's abolition reduces the tax on transfer of property from 5 to 2 per cent. and entirely frees the navigation on the Nile and canals. Internal navigation, except on the lakes, where the fisheries have to be preserved, is now free from one end of Egypt to the other.

Cattle Plague.

The cattle plague, as judged by official returns, shows a total mortality since June, 1903, of 147,000 head and the country does not seem to be much disturbed by it. In 1865 the statistics showed a mortality of 730,000 from this cause. In spite of the great diminution of the death-rate for the last few months, the Serum Institute at Abbasiyeh, under the direction of Dr. C. Todd, is still continuing to prepare large quantities of serum every week from a farm of 400 bulls. If Egypt is fortunate enough not to require the serum, which is said to keep well for five or more years, the Soudan will need it, for cattle plague has lately broken out there.

Increased Grants to some Departments.

The Ministry of Public Instruction has obtained a much needed addition of £31,000, which will enable money to be spent on further elementary instruction among the poorer natives, development of higher primary teaching, and increase of salaries of Egyptian schoolmasters. The number of boys in the secondary schools has increased from 501 in 1900 to 1036 in 1905 and instead of most of them choosing French as their European language of study they now almost invariably select English. The sanitary department is a gainer by £27,000 which is almost all wanted for the pay of extra officials required to cope with epidemics as they arise. The sum of £6000 has been added to the Budget for sweeping and watering the streets of Cairo; some of the streets in the native quarters of the town are now being paved with asphalt, which is a great help in keeping them clean. £30,000 have also been granted for keeping Cairo streets in proper repair. The prison administration has been granted £15,000, part of which will be expended on giving the prisoners a better diet and so trying to remove one of the causes of typhus and relapsing fever which still sometimes occur. At the War Office there is provision made for the creation of eight new posts for native medical men and the formation of a recruiting service in the Soudan. The British garrison has been reduced in order to prevent the Egyptian Government having to pay more than £100,000 a year, which represents the extra expense of maintaining an army of occupation here over and above

that sum which would be incurred if the troops had been stationed in the United Kingdom. For many years Egypt has not paid her full share of this agreement but now that the financial condition of this country has so much improved it is only fair that full payment should in future be made. Egypt had last autumn to choose between paying more money or having a smaller British garrison. In the settled state of the country she naturally chose the latter alternative. A new feature of this year's Budget is a chapter of special expenditure for buildings amounting to nearly half a million pounds. This sum includes some items of hygienic interest such as £5000 for public slaughter-houses, £11,500 for increase of the lunatic asylum at Abbasiyeh, and £30,000 for rain-water drains in Cairo. The Sunkin-Atbara railway was pushed on energetically last year and ought to be completed in 1906. The improvements necessary in the existing State railways will swallow up the chief part of Egypt's newly found wealth.

Cairo, March 1st.

CANADA.

(FROM OUR OWN CORRESPONDENT.)

The Canadian Association for the Prevention of Tuberculosis.

THE annual meeting of the Canadian Association for the Prevention of Tuberculosis will be held at the capital, Ottawa, on March 15th. Dr. J. George Adami, professor of pathology in McGill University, will deliver a lecture on Some Phases of the Crusade against Consumption. His Excellency the Governor-General will preside at the meeting. This association has recently presented a petition to the Montreal civic council asking cooperation with it in establishing a sanatorium in that city.

Marmorek's Serum Treatment of Tuberculosis.

In June, 1904, Dr. de Martigny of Montreal was commissioned by the hygiene committee of Montreal to proceed to Paris and there to study and to observe the methods employed and results obtained in connexion with the use of Marmorek's serum in cases of tuberculosis. Dr. de Martigny has recently returned to Montreal and in his report to the hygiene committee he strongly recommends the serum for the treatment of tuberculosis. The official statistics of deaths for Montreal from this scourge give the number as between 700 and 800 annually and Dr. de Martigny feels positive that, if Marmorek's method were applied at once to the treatment of all the consumptives of Montreal, in ten years the disease would be as rare in that city as is small-pox at the present day.

Leprosy in Canada.

In his annual report to the Federal Parliament Dr. Smith, the superintendent of the Leper Hospital at Tracadie, New Brunswick, reports that leprosy is rapidly decreasing. There are at present in this institution 15 inmates, ten males and five females. One of these, however, is out on parole, his being one of those rare cases where the disease evidently has undergone spontaneous cure. Of those on the register nine are French, while three are of Icelandic and three of English origin. Four deaths occurred during the past year and there were three admissions. Four of the lepers have lost their eyesight, one from repeated attacks of iritis and the others from ulcerations and leprous infiltration. Chaulmaugra oil has been given in combination freely and Dr. Smith states that he has observed beneficial effects from its use. Erysipelas and feverishness are almost unknown since the introduction of the oil two years ago. Shortly before sending in his report Dr. Smith made a tour throughout the neighbouring parishes and found one genuine case of leprosy and three persons showing suspicious premonitory symptoms.

Vancouver General Hospital.

The annual meeting of the board of governors of the Vancouver General Hospital was held in that city on Feb. 8th. It was stated that there had been treated in the hospital 307 cases of medical diseases and 400 surgical cases, 28 eye cases, and 40 cases of diseases of women. There were 272 operations performed, including 23 for appendicitis. According to the report of the treasurer the receipts totalled $39,238.27, while the expenditure amounted to $31,801.32. Dr. A. M. Robertson is the medical superintendent.

The Water-supply of Montreal.

A commission authorised by the city council of Montreal is at present making daily analyses of the water supplied to that city for drinking purposes. Upwards of 40 varieties of organisms have been found. In all of the analyses which have been made so far there have been rarely found more than 200 germs per cubic centimetre. Sometimes in winter not more than 70 have been found. As an average glass of water holds five ounces or 140 cubic centimetres, an inhabitant of Montreal may take 28,000 germs in every glass of water that he imbibes. The typhoid bacillus has never yet been found in Montreal water.

Feb. 27th.

NEW YORK.

(FROM OUR OWN CORRESPONDENTS.)

Pan-American Medical Congress.

THE fourth Pan-American Medical Congress was held at Panama on Jan. 3rd, 4th, 5th, and 6th. The attendance was meagre; most of those present came from the United States, there being very few representatives of South or Central American States. The facilities for reaching Panama were bad, no adequate arrangements having been made for those coming from the United States. One vessel upon which most of the medical visitors from the Eastern States took passage was delayed *en route* and did not reach its destination until the congress was virtually over. Some interesting addresses were delivered, notably by Dr. W. C. Gorgas on Isthmian Sanitation; by Mr. Tracy Robinson on The History of the Canal; and by Mr. J. M. Wallace on the canal proposition itself. Mr. Wallace concluded his address with an emphasised reference to the importance of sanitation in the canal zone. He stated that he was unwilling to start so vast an undertaking with the shadow of death as an advance guard for the work. He said that the sanitation of the canal zone was in the hands of Colonel Gorgas and that its success will be due to his efforts. He impressed upon his audience and the men participating that this was as important as the canal itself. Owing to the small attendance it was decided to combine all the sections of the Congress and to make one meeting of the whole. Among the papers of interest read were those by Dr. Nicholas Senn of Chicago, Dr. Crile of Cleveland, Dr. Carlos Finlay of Havana, and Dr. Chassaignac of New Orleans. Dr. Icaza of Panama was the President of the Congress and Dr. Jose Calvo of the same city was secretary. From the sight-seeing and social points of view the meeting was a great success. Dinners, balls, and excursions contributed to the amusement of the guests.

Meeting of the American Public Health Association.

The thirty-second annual meeting of this body was held in Havana on Jan. 9th, 10th, 11th, 12th, and 13th. Many of the physicians from the United States who had attended the Pan-American Medical Congress in Panama went on to Havana for the meeting of the Public Health Association. The association met at the Athenæum Club under the presidency of Dr. Carlos Finlay of Havana. Among other papers read was the Report of the Committee on Purification and Preservation of Water-Supplies by Mr. George W. Fuller of New York. With reference to filtration he said that the number of cities in the United States with a population of 25,000 now using the filtration plan was about 8 per cent., those which had filters under construction 11 per cent., those in which filters had been authorised 20 per cent., and those in which filters were being considered as necessary 31 per cent. Mr. H. W. Clark of Boston said that since the introduction of filtration at Lawrence, Massachusetts, the city had increased in population from 45,000 to 75,000 and the percentage of deaths from typhoid fever had been materially increased. Professor F. C. Robinson of Brunswick, Maine, read the Report of the Committee on Disinfection and Disinfectants. Referring to experiments on disinfection of railway cars by formaldehyde the results showed that in the case of passenger cars it was practically impossible to sterilise completely all parts by the vapour of formalin, but still the experimenters were of opinion that it is the most practical agent to employ for that purpose. Dr. Erastus Wilson of Havana read a paper on the Actual Sanitary Conditions of Havana and the further requirements for their improvement. Dr. Wilson said that the prevailing annual mortality in the city of Havana previously to American intervention was approximately 40 per 1000. The continuation of the sanitary measures introduced by

that intervention and the continued improvements of the pavement of streets had reduced the mortality and morbidity to about 50 per cent. of the former rate, besides beautifying the city and making it infinitely more attractive for residents who were interested in health and general culture. Dr. Carlos Finlay in his address as president stated that in the district of Havana, notwithstanding the admission of imported cases of yellow fever from foreign ports, not a single case originating on the island had been recorded. With the experimental proofs that they now possessed that fomites *per se* were incapable of transmitting the disease the inevitable conclusion must be that in the cases which he mentioned infected mosquitoes had been conveyed upon floating bodies by the tide. The Report of the Committee on the Bacillus Tuberculosis in Man and Animals was read by Dr. V. C. Moore. The conclusions reached were that the committee did not feel able to say with what frequency bovine infection of man took place but it was evidently not a rare occurrence. The committee considered that the evidence going to show that such infection did take place was absolutely conclusive and that it not only justified but made imperative the passage of stringent laws by municipal and State authorities for the suppression of tuberculosis in cattle and the prohibition of the sale of meat and milk from tuberculous animals. The meeting was a great success. The association is to meet in the city of Boston, Massachusetts, in 1905.

Instruction in Public Health in Medical Colleges.

The department of medicine of the University of Pennsylvania has organised a series of lectures on the subject of hygiene and medicine of general interest to practitioners. It was originally designed that this course should be for the benefit of fourth year students but invitations to the medical profession of the city are now given. The same university will introduce into its curriculum, beginning Oct. 1st, 1905, a course in public health. This course will include instruction in sanitary engineering; inspection of meat, milk, and other animal products; the sanitary engineering of buildings; social and vital statistics in the United States; and practical methods used in sanitary work, general hygiene, personal hygiene, and sanitary legislation. This is the first attempt in this country to introduce a course of instruction in hygiene into the curriculum of a university.

Tuberculosis among the Jews.

Amongst the numerous paradoxical characteristics of the Jews their relative immunity to tuberculosis has been considered most peculiar. Evidence wherever obtainable shows that they are less liable to the "white plague" than their non-Jewish neighbours, notwithstanding the large numbers among them who have flat chests, ill-developed muscles, and who are anæmic and generally below the standard of physical vigour when compared with the Gentiles among whom they live. According to the "Jewish Encyclopædia"—containing statistics gathered in Russia, Germany, Hungary, Italy, England, and the United States—this view is confirmed. A recent thorough study of the Jewish district of Chicago by Dr. Theodore Sachs leads him to the conclusion that the immunity of the Jew from tuberculosis has been greatly over-estimated. In his opinion the difference is due to the fact, which he discovered, that only a small percentage die in the district in which they have contracted the disease, the rest leaving the city in search of a cure in some climate reputed to be efficacious. In proof of this contention the author shows that of 51 deaths from the disease 26 occurred in persons younger than 15 years of age, while in the period of life between 20 and 40 years, the usual period of greatest mortality, only ten deaths took place. The results of Dr. Sachs's inquiries differ from investigations made in New York by its health department in regard to both the morbidity and the mortality of tuberculosis in Jewish districts. The conclusion reached was that the Jews of this city are proportionately less affected with tuberculosis than the non-Jewish inhabitants, even when we compare them in the same district or the same block. The statistics of New York are much larger than those taken at Chicago and comprise also morbidity and are, therefore, regarded as more trustworthy.

Protective Inoculation against Cholera.

The United States Government laboratories have been engaged in experimental studies on protective measures against Asiatic cholera and have recently published the results. The author of the report, Dr. Richard P. Strong, states that the work was based upon experimental work performed in the Berlin Institut für Infectionskrankheiten in 1903. The Philippine Islands have furnished the most recent opportunity for a thorough study of cholera and advantage was taken of the severe epidemic there to perfect our knowledge of protective measures. According to Dr. Strong the history of cholera in a tropical country has demonstrated the fact that it is impossible to eradicate, or even to control satisfactorily, the disease by ordinary hygienic methods, such as the purification of the food-supply and the water-supply of infected districts. It was shown by studies made in the Manila laboratory during the period of the widespread infection that the disease was not usually transmitted directly by water but probably more often by food infection. Preliminary trials with Haffkine's method of protective inoculation showed the impracticability of using it among the natives. Consequently, the experimental study now described was undertaken in the biological laboratory in Manila with a view of obtaining some practicable and efficacious form of protective inoculation against the disease. The conclusions reached are as follows: (1) by the autolytic digestion of carefully killed cholera spirilla in an aqueous fluid the receptors become separated from the bacterial cells and may be filtered off in solution; (2) the injection of these free receptors into both man and animals furnishes a means of producing high bactericidal and agglutinative blood sera but the value of these sera is moderate; and (3) the subcutaneous injection into man of such free receptors is a process which is not only free from any danger but one which produces practically no local disturbance and only a slight general reaction and hence the method is a practicable one for producing a cholera serum in man. Owing to the absence of cholera on a wide scale in the Philippines it has been impossible to give the serum a proper test but Dr. Strong, basing his opinions on the statistics of Haffkine in India and the work of Murata in Japan, which show that by the injection of a small amount of the killed organisms a certain degree of immunity against the natural mode of infection is acquired, thinks it probable that by the use of his prophylactic human beings may acquire a good active immunity against the disease.

Feb. 25th.

NOTES FROM INDIA.

(FROM OUR SPECIAL CORRESPONDENT.)

Report of the Pasteur Institute at Kasauli.

THE fourth annual report of the Pasteur Institute at Kasauli records a steady advance in popularity. During last year 612 patients were treated, of whom 248 were Europeans and 364 were natives. All these were for bites from presumably rabid animals. In the report the cases are divided according to those bitten by animals proved by experiment to have been rabid, those bitten by animals certified as rabid by a veterinary surgeon or a medical officer, and those bitten by animals suspected to be rabid but for which there was only presumptive evidence. In order to estimate the danger of bites in different parts of the body the cases are further analysed into those bitten on the head or the face, those bitten on other exposed parts, and those bitten through clothing. The last class are the least dangerous and the cases of bites on the head and the face are the most dangerous. As the clothing of the natives is so thin it does not appear to offer them much protection and the natives when bitten do not show the same alacrity as Europeans for immediate treatment. Of the 612 persons treated five cases failed, all natives. They had all been severely bitten and with one exception arrived late for treatment. There were five cases also in which the disease had set in before it was possible to protect them. Other and very important work is carried out at Kasauli. A large quantity of sera for therapeutic purposes was prepared and the bacteriological laboratory was utilised by officers of the Indian Medical Service and the Royal Army Medical Corps for instruction purposes. In addition a considerable amount of research work was done, more especially in connexion with curative sera, the action of snake venoms, cerebro-spinal meningitis, and the improvement of the antirabic treatment.

The Sanitary Improvement Scheme for Simla.

The report of Colonel Bamber, sanitary commissioner of the Punjab, upon the Simla sanitary improvement scheme

has been considered urgent by the municipal committee which has recommended the following works for immediate attention: provision of incinerators, connecting all the sullage water of the compounds by an extended sewerage system, provision for dhobie ghâts, sanitary buildings for artisans and coolies, sewerage installation for houses east of Jakko, an enlarged bakery, additional markets, and conversion of native public latrines into automatic troughs. This is a good list and will necessarily involve a large outlay.

Further Large Rise in the Plague Mortality and Spread of the Epidemic.

The plague mortality throughout India has risen enormously during the past few weeks. For the week ending Feb. 4th no less than 36,167 deaths from plague were recorded as compared with 28,104 three weeks previously. The United Provinces, the Punjab, and Bengal are now bearing the chief brunt. The following figures show how the disease has spread: United Provinces, 15,337 deaths as compared with 11,777 three weeks ago; the Punjab, 9472 deaths as compared with 5569; Bengal, 5150 as against 3318; Bombay district, 3111 as against 2886; Hyderabad State, 526 as against 399; Bombay city, 395 as against 192; and Calcutta, 84 as against 33. Later returns show a still further rise in Bombay city (540 deaths for the week ending Feb. 11th) and Calcutta (106 deaths). During the past fortnight also Rangoon has become infected and 25 cases were reported up to Feb. 13th. Madras also has been attacked and several indigenous cases have been reported. Singapore also has been declared an infected port. From the Punjab administration report I find that no less than 327,357 inoculations against plague were performed last year and by an analysis of the cases it was found that the liability to death was two and a half times as great among the uninoculated as amongst those who had had the courage and foresight to be inoculated.

The Bombay Sanitary Association.

The first annual meeting of the Bombay Sanitary Association has been recently held and the report of the year's work shows remarkable energy and enthusiasm amongst those who manage it. The recent exhibition in Bombay gave the opportunity for a health section which was admirably organised and must prove to have been of great educational value. It is hardly to be expected that the association could show immediate results but it has certainly appeared to have awakened a hygienic conscience and a great deal has been done in instructing the masses with regard to a more healthy manner of living. Lectures in the vernacular as well as in English have been given, pamphlets and leaflets have been freely issued, and house-to-house visitation has been energetically made. Not the least remarkable part of the work of this new association has been the admirable and detailed organisation adopted for the purpose of educating the public as well as in instructing special classes of students as teachers. The association has obtained the coöperation and pecuniary assistance of the corporation and the active support of the Government. Subscriptions have come in freely and the general support which the association has received augurs well for a continuance of the useful work and a furtherance of the objects which its promoters have in view.

The Wadia Home for Nurses in Bombay.

The foundation-stone of the Wadia Home for Nurses in Bombay has just been laid by His Excellency the Governor. The home is for the nurses of the large "J. J." Hospital. 25 years ago there were only two sisters working. In 1890 three English nurses were obtained in addition and some native nurses also assisted. Later more young native women were employed and the Bhownaggree Home for them was established. Subscriptions and a contribution from the Government enabled the nursing staff to be increased further but it has never been sufficient. Accommodation for the nurses naturally came to be required and the mother of Mr. N. N. Wadia has generously given a large sum for this purpose. The total cost will be Rs.87,000, of which the Government contributes Rs.47,000. This should provide for present needs but with increased hospital accommodation and a further nursing staff other quarters will very soon have to be provided. Public subscriptions for the support of the various nursing establishments connected with the hospitals in the principal cities in India have never been very generous or extended and if it were not for Government support they would perhaps be in a bad way. It is possible, however, that if the Government gave less freely more support might be obtained from the public and as these hospitals confer such inestimable benefits on the native communities it is not expecting too much to ask them to contribute more freely.

Compulsory Revaccination.

The Madras corporation has adopted the suggestion of the Government in favour of compulsory revaccination for all municipal employés who enter its permanent service.

Feb. 18th.

Obituary.

ROBSON ROOSE, M.D. BRUX., F.R.C.P. EDIN., M.R.C.S. ENG.

Dr. Robson Roose, who died on Feb. 12th, had for a long series of years been well known in London as the medical adviser of very many notabilities in West-end society and in the higher political circles. He was born in London in 1848 and studied medicine at Guy's Hospital and in Paris. In 1870 he took the diploma of L.S.A. and very soon commenced practice in Brighton. In 1872 he took the diploma of M.R.C.S. Eng. and in 1875 that of M.R.C.P. Edin.; in 1877 he obtained the degree of M.D. at Brussels and was elected a Fellow of the Royal College of Physicians of Edinburgh. It is said that while at Brighton he was "discovered" by the late Mr. Edmund Yates, the well-known "society journalist" and man of letters, who introduced him to various influential personages. Removing from Brighton to London, Dr. Robson Roose settled at 49, Hill-street, Berkeley-square, where fortune favoured him so greatly that his services were everywhere in request and he was a familiar figure at social gatherings of the world of fashion. Of late years, however, he had some unfortunate experiences in connexion with the directorship of a commercial undertaking and declining health made it necessary for him to withdraw to some extent from active work.

RALPH HODGSON, M.R.C.S. ENG., L.R.C.P. LOND., L.D.S. R.C.S. IREL.

Mr. Ralph Hodgson of Liverpool-street, Sydney, New South Wales, died very suddenly on Jan. 18th while supervising some repairs which were being made in his motor launch. He was the fourth son of Captain Charles Hodgson, late of the Grenadier Guards, assistant commissioner of the City of London police. He studied medicine at St. Bartholomew's Hospital and took the diplomas of M.R.C.S. Eng. and L.R.C.P. Lond. in 1885, having been already in possession of the dental diploma of the Royal College of Surgeons in Ireland since 1881. In 1887 he went to Sydney and entered upon the practice of his profession at Croydon. Mr. Hodgson was one of the founders of the King Edward Hospital for Seamen and claimed that he was the first to advocate the use of head measurements and finger prints in jails for the identification of criminals in Australia. He was a man of fine physique, a representative chess player at inter-State matches, and at the last Balmain regatta he won a race with a motor boat managed by himself and driven by an engine of his son's make. Mr. Hodgson was 50 years of age at the time of his death. He has left a widow and one son who is a barrister-at-law.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. J. Felix, director-general of the Roumanian Sanitary Department.—Dr. G. Piotrowski, *privat-docent* of physiology in Lemberg.—Surgeon-General Pful of Hanover.—Dr. Gunther, formerly president of the Saxon Medical Association, at the age of 76 years.

LEGACY TO A RUSSIAN MEDICAL BODY.—The Conference of the Military Medical Academy has decided to accept the legacy made in its favour by K. R. Nedatsk, consisting of two sums—one of 16,000 roubles (£1600) to found a bursary in the name of the testator and the other of 50,000 roubles (£5000) for treatment by means of sero-therapy. The will of the testator is that the capital should be kept intact, the academy simply disposing of the interest.

Medical News.

UNIVERSITY OF CAMBRIDGE.—The result of the voting on the proposals for the reform of the Previous Examination was that the *non-placets* numbered over 1500 and the *placets* over 1000. The proposals of the syndicate were thus rejected by a majority of about 500. It is understood that a majority of the resident members of the Senate voted *placet*.—At a Congregation on March 2nd the following degrees were conferred :—

Doctor of Medicine.—R. H. Urwick, Trinity; and G. M. MacDonald, Christ's.

Bachelor of Medicine.—J. S. Pearson, Trinity; and R. A. Worthington, Clare.

ROYAL COLLEGE OF SURGEONS IN IRELAND.—The following candidate having passed the necessary examination has been admitted to the Fellowship of the College :—

Miss A. F. M. Cornall, L.R.C.S. Edin.

The following candidates have passed the primary part of the Fellowship examination :—

J. Campbell, H. H. B. Cunningham, D. Adams, R. M. Bronte, J. D'Alton, P. G. T. Elvery, J. B. Hanafin, F. M. Hewson, J. Molyneaux, C. Sheahan, T. Sheehy, and G. F. Shepherd.

TRINITY COLLEGE, DUBLIN.—At examinations held in Hilary term the following candidates were successful :—

Final in Surgery.—Henry E. M'Cready, Robert Magill, Michael J. M'Auliffe, and Edward G. Scroope.

ROYAL DENTAL HOSPITAL.—Mr. J. Tweedy, President of the Royal College of Surgeons of England, will preside at the annual meeting of the Royal Dental Hospital on Tuesday next, March 14th, at 5.30 P.M.

OBSTETRICAL SOCIETY OF LEIPSIC.—Dr. H. Macnaughton-Jones, formerly University Professor of Midwifery in the Queen's University, has been elected an honorary member of the Obstetrical Society of Leipsic.

PRESENTATION TO A MEDICAL PRACTITIONER.—Mr. Charles Edward Liesching, L.R.C.P. Lond., M.R.C.S. Eng., was presented on Feb. 17th with an aneroid barometer by the members of the Tiverton (Devon) branch of the St. John Ambulance Association in appreciation of his services as honorary lecturer.

Messrs. C. J. Hewlett and Sons, export druggists, have been awarded a gold medal for their standardised tinctures, drugs, and pharmaceutical preparations at the Cape Town International Exhibition, 1904-05

AMBIDEXTERITY FROM THE POINT OF VIEW OF THE PHYSICIAN.—On March 2nd, at the rooms of the Royal Statistical Society, Adam-street, Strand, W.C., Sir James Sawyer delivered a lecture on Ambidexterity, pointing out that not only were we not by necessity unidextral but that man in his early development was ambidextrous. This quality was lost partly by necessity and partly by custom and especially in the development of writing and fighting. Early man found that he could fight better with a one-handed than with a two-handed weapon. He then found that it was necessary to keep his heart as far as possible from his adversary. Thus the right side was given prominence. In the use of the pen the right hand was further developed. He went on to urge that although we could not help having a preferred hand perhaps we need not have a neglected one. Ambidexterity could be acquired in many ways, especially by using each hand in turn in all one-handed activities. As preliminary exercises he would recommend writing with the other hand, carrying a stick or umbrella in the right hand on going out and in the left hand when returning, and fencing with the foil at a mark on the wall with either hand alternately. Learning to drive in a nail with either hand was also useful. A fair amount of ambidexterity could be acquired in a few months with gain in physical health and better chances of living a healthy and long life. Incidentally the lecturer mentioned references to ambidexterity by De Quincey and Carlyle and quoted the following from Brown-Séquard: "We have a great many motor elements in our brain and our spinal cord which we absolutely neglect to educate. Such is the case with the elements which serve for the movement of the left hand. Perhaps fathers and mothers will be more ready to develop the natural powers of a left hand of a child, giving it thereby two powerful hands, if they believe, as I do, that the condition of the brain and spinal cord would improve if all their motor and sensory elements were fully exercised." With this Sir James Sawyer said that he was in full accord. The next lecture of the series will be delivered by Sir W. Blake Richmond, K.C.B., on March 16th, at 8 P.M., on Ambidexterity in Art.

ROYAL FREE HOSPITAL, LONDON.—The annual court of governors of this hospital will be held on March 15th. The chair will be taken at 3.30 P.M. by H.R.H. Princess Christian, President of the Hospital, when the annual reports and accounts for the year ending Dec. 31st, 1904, will be presented and the new electric lift and other improvements in the Victoria wing will be opened. The governors and their friends are invited to inspect the wards and the various departments of the hospital during the afternoon. Communications on the matter should be addressed to Mr. Conrad W. Thies, secretary, Gray's Inn-road, W.C.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Revaccination of School Children.

THE Duke of NORTHUMBERLAND is interesting himself in the vaccination question. He has given notice of his intention to ask the Government whether it proposes to introduce a Bill this session for the promotion of the revaccination of children of school age.

A New Vaccination Bill.

In the Commons Mr. PHILIP STANHOPE has introduced a Bill to amend the administration of the Vaccination Acts. The two operative clauses are these:—2. After the passing of this Act an officer of a board of guardians or other local authority, wholly or partly paid for his services out of the proceeds of any rate, shall not institute proceedings or be concerned in legal proceedings against any person for non-compliance with the provisions of any Vaccination Act, unless authorised to do so by a resolution passed by the board of guardians or other local authority employing him, nor until a copy of each resolution in writing, signed by the chairman presiding at the meeting of the board of guardians or other local authority at which such resolution was passed, has been handed to him; and such officer shall exhibit to the justices adjudicating upon a summons taken out by him such copy of resolution when demanded by them or by the defendant or other person appearing on his behalf. 3. An application for a certificate of exemption under the Vaccination Act, 1898, may be made by the father or the mother or either of the guardians of a child liable to vaccination under any Act, and the justices to whom the application is made shall not catechise the applicant, but may, if not satisfied that the applicant has a conscientious objection to vaccination, administer, or cause to be administered, the usual oath; and if the applicant declares on oath that he or she believes that vaccination would be prejudicial to the health of the child in question, a certificate of exemption shall be granted, at a cost not exceeding one shilling, without further question or remark.—Mr. STANHOPE has the support of Mr. BROADHURST, Mr. CHANNING, Mr. MAURICE LEVY, and Sir CHARLES MCLAREN.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 1ST.

The Inspection of Meat in London.

Mr. FIELD asked the President of the Local Government Board whether he was aware that a master butcher in Ealing recently purchased a number of pigs in the Central Meat Market, Smithfield, London, E.C., which he was informed were Norfolk pigs slaughtered at Islington Market where they would undergo examination in the ordinary course, and having purchased these pigs at top market price they were delivered at Ealing where the inspector condemned two heads as being affected with tuberculosis, and that a summons was now pending with a view to secure a criminal conviction, and whether he would make inquiries in this case in order to insure uniformity of inspection and thereby safeguard a trader from criminal proceedings in respect of meat purchased *bonâ fide* passed by one inspector and subsequently confiscated by the inspector in another district.—Mr. LONG replied: I have made inquiry with respect to this matter. I understand that the pigs were not cut up at the Islington Market or at the Central Meat Market, and the medical officer of health of the City points out that it was quite possible that disease which would not show itself in the carcass would become apparent after cutting up. I am informed that proceedings in the case are now pending before the justices and hence I cannot take any further action with regard to it. But I may state that one of the medical inspectors of the department is engaged in inquiring into the methods of meat inspection in London with a view of reporting to me on the subject. I may add that the Ealing town council has issued a circular to the butchers in the borough in which it states that the sanitary inspector may, at the request of a butcher, visit his premises and inspect any meat which has been delivered to him, as to the condition of which he may be

doubtful, and that in the event of any of it being found to be diseased the inspector will take steps to have it destroyed in the manner prescribed by the law. The town council points out that in such a case the risk of exposing for sale meat unfit for human consumption would be minimised.

Purity of Foods.

Sir CUTHBERT QUILTER asked the President of the Local Government Board whether he was now able to announce the course which it was proposed to adopt with a view to giving effect to the large and important recommendations of the Royal Commission on Arsenical Poisoning more especially with regard to the appointment of a special expert officer to inquire into, and to advise upon, all questions affecting the purity of manufactured, preserved, or prepared foods, whether of home or foreign origin.—Mr. LONG answered: I have given consideration to this subject and I am making arrangements with regard to the matter referred to in the latter part of the question which I hope will take effect at the commencement of the ensuing financial year.

Charge for Death Certificates.

Colonel SADLER asked the President of the Local Government Board whether, in view of the fact that the charge made for certificates of death for members of trades unions was 2*s.* 7*d.* each while the charge made for a member of a friendly society was 1*s.*, he would consider the advisability of making the charge uniformly 1*s.* in both cases.—Mr. LONG replied: I will take note of this suggestion but legislation would be necessary in order to give effect to it.

THURSDAY, MARCH 2ND.

Irish Dispensary Districts.

Mr. JOSEPH NOLAN asked the Chief Secretary for Ireland whether, in view of the fact that an inquiry had been held in Ardee into a proposal on the part of the Local Government Board, Ireland, to convert the three existing dispensary districts of Collon, Drumcondra, and Dunleer into two, at an extra cost to the ratepayers, that the balance of evidence at the inquiry was against the proposal, and that the proposal, if carried into effect, would leave some of the people likely to require advice a distance of 14 miles from the residence of the medical officer, he could state what was the final decision arrived at by the Local Government Board in regard to the matter.—The ATTORNEY-GENERAL for IRELAND, who replied, said: The inquiry referred to was held in January of last year. In September the Local Government Board made an Order under seal rearranging the dispensary districts. Application was then made to the King's Bench Division for a writ of *certiorari* to quash the Board's Order and was refused with costs. An appeal to the Court of Appeal was dismissed on Feb. 2nd. The Board's Order is now being put into operation and the Board has also regulated the salaries of the medical officers, allowing to the two medical men the amounts formerly paid to three officers. No extra cost to the rateyayers is entailed.

FRIDAY, MARCH 3RD.

Irish Local Government Board and Maternity Nursing.

Mr. JOHN O'DONNELL asked the Chief Secretary for Ireland whether there had been any exceptional circumstances to justify the granting of an inquiry into the necessity for an official maternity nurse in Ballyhaunis dispensary district; whether he would state on what portion of the evidence Sir Acheson M'Cullagh based his recommendation to have a sealed order issued in connexion with the matter; and whether he would order that a copy of the evidence given at the inquiry be sent to Mr. Michael Delaney, the senior guardian for the district.—The ATTORNEY-GENERAL for IRELAND, who answered, said: Representations were made to the Local Government Board by ratepayers urging the necessity for the appointment of a midwife in this district. The guardians failed to take any action in the matter and the Board thereupon directed a local inquiry to be held in order to ascertain the facts. The Board's decision was based not upon the inspector's report but upon the sworn evidence adduced at the inquiry. A copy of the evidence has already been supplied to the board of guardians.

Mr. O'DONNELL further asked the Chief Secretary for Ireland whether he was aware that the bulk of the evidence given at the recent inquiry in the Claremorris union regarding the necessity for appointing a maternity nurse for the Ballyhaunis dispensary district was against such an appointment being made, and that Ballyhaunis district had residing within it two medical men and two maternity nurses; and if so, whether, in view of the fact that the appointment of such a nurse was in opposition to the public opinion of the district, he would have the necessary instructions given to have the sealed order immediately withdrawn.—The ATTORNEY-GENERAL for IRELAND answered: The evidence of individual guardians was opposed to the appointment but it is to be borne in mind that as a body they had persistently declined to make such an appointment. On the other hand, the expert testimony of the medical officer of the district was strongly in favour of the employment of a trained midwife. There is but one medical officer resident in the district whose duty it is to attend on medical relief tickets and but one midwife whose services are not, however, available for the sick poor free of charge. My right honourable friend stated on Feb. 23rd that it is not proposed to withdraw the sealed order.

MONDAY, MARCH 6TH.

Medical Inspectors in Scotland.

Mr. WEIR asked the Lord Advocate whether he was aware that although the population of Scotland was slightly in excess of that of Ireland there was only one medical inspector provided under the Local Government Board Vote for the whole of Scotland, whilst seven such inspectors were provided for Ireland under the Irish Vote; and whether, seeing that it was quite impossible for one medical inspector to visit the various districts in Scotland requiring his presence, the question of appointing additional medical inspectors would be considered.—The LORD ADVOCATE replied: The facts are as stated in the first part of the honourable Member's question but the Secretary for Scotland has no proposals to make at present in the direction suggested.

Recommendations of the Committee on Physical Deterioration.

Mr. WEIR asked the Lord Advocate whether the Secretary for Scotland would consider the expediency of issuing to parochial medical officers, sanitary inspectors, and inspectors of poor, leaflets containing the opinions of the Committee on Physical Deterioration relative to ventilation and the bringing up of young children, with a view to the dissemination of information on these subjects.—The LORD ADVOCATE answered: The Secretary for Scotland will consider whether any official communication relative to this report can be made to the local authorities in Scotland.

Mr. WEIR put a similar question to the President of the Local Government Board and Mr. LONG replied: I have given consideration to the honourable Member's suggestion and I have not at present seen my way to adopt it.

Restrictions on the Employment of Women.

Sir JOHN GORST asked the Under Secretary of State for Foreign Affairs whether he would lay upon the table of the House a return showing the restrictions on the employment of women before and after childbirth prevailing in foreign countries so far as they were known to the Foreign Office.—Earl PERCY replied: The latest information in the possession of the Foreign Office is contained in the "Further Correspondence respecting the International Labour Conference at Berlin, Commercial (No. 10, 1890)." The Secretary of State will be happy to bring the information up to date if the right honourable Member desires it.

Physical Condition of School Children.

Sir JOHN GORST asked the Secretary to the Board of Education whether a provision would be inserted in the new code making the payment of Parliamentary grants to public elementary schools conditional upon the Board of Education being satisfied by medical inspection or otherwise that the children in respect of whom the grant was made were physically fit to receive the instruction for which the grant was paid.—Sir WILLIAM ANSON said: It is extremely doubtful if the Board has the legal power to require the medical inspection of children in public elementary schools. Even if it does possess such power the right honourable Member hardly seems to have realised what the effect of its putting it into operation would be. The organisation of any such system as is suggested in the question must take some time to complete and in the meanwhile the public elementary schools throughout the country would be deprived of Government grant. The Board does not propose to insert any such provision in the new code.

A Prison Case.

Mr. CLAUDE HAY asked the Home Secretary whether his attention had been called to the recent case of a female prisoner having had her hair cut while awaiting trial and whether he would state what steps he had taken in the matter.—Mr. AKERS-DOUGLAS replied: Careful inquiry was made into the case as soon as attention was called to it (which was done by the girl's father on Feb. 20th) and I find that sanitary considerations rendered the cutting of the hair necessary. The woman was examined on reception by the deputy medical officer of the prison who found her hair to be verminous and gave written directions authorising it to be cut. Dr. Quinton, the governor, himself a medical man of great experience, is satisfied from the deputy medical officer's account and from the report of the hospital officer that no other measures would have eradicated the dirt and vermin without seriously injuring the scalp. In the interests of other prisoners it is necessary to take prompt and effectual precautions in cases of this kind, but a woman's hair is never cut except when there is no possibility of cleansing it in any other way and then only on the certificate of a medical officer.

TUESDAY, MARCH 7TH.

Sore-throat and Milk-supply.

Mr. WEIR asked the Lord Advocate whether, having regard to the fact that Dr. A. K. Chalmers, the medical officer of health of Glasgow, stated that the epidemic of sore-throat at the Belvidere Hospital in that city last summer was due to teat eruption in the stock at the farm from which the milk-supply was obtained, he would consider the expediency of introducing legislation such as would secure the periodical inspection of stock kept for the supply of milk to public dairies.—The LORD ADVOCATE said: Under No. 14 of the Local Government Board Draft Regulations for regulating the duties of sanitary inspectors, which are in force over almost all Scotland, those officers are bound to visit dairies, cowsheds, and milk-shops at least once in every three months. Legislation on this subject therefore appears to be unnecessary.

BOOKS, ETC., RECEIVED.

BERGMANN, J. F., Wiesbaden. (F. BAUERMEISTER, 49, Gordon-street, Glasgow.)

Hörprüfungs- und Empfindlichkeits-Tabellen des Schwerhörigen Ohres unter Zugrundelegung Meines Objektiven Hörmasses. Von Professor Dr. Paul Ostmann, Direktor der Kgl. Universitäts-Poliklinik für Ohren-, Nasen- und Halskranke zu Marburg A.L. Price M.1.20, or 1*s.* 6*d.*

Die Ohrenheilkunde der Gegenwart und ihre Grenzgebiete. Herausgegeben von Dr. Otto Körner, in Rostock. IV. Die Otosklerose. Von Dr. Alfred Denker, A.O. Professor, Direktor der K. Universitätsklinik und Poliklinik für Ohren-, Nasen- und Kehlkopfkrankheiten in Erlangen. Price M.4.60, or 4*s.* 9*d.*

Handbuch der Embryologischen Technik. Von Dr. med. Paul Röthig, früher Assistent am anat.-biol. Institut Berlin. Price M.10.60, or 10*s.* 9*d.*

Handbuch der Geburtshülfe. In drei Bänden herausgegeben von F. von Winckel, in München. Zweiter Band, I. Teil. Price M.14 60, or 14*s.* 9*d.*

Das Chlorom. Von Robert Heyden, Approbierter Arzt aus Tractow. Price M.1, or 1*s.* 3*d*

Handatlas der Operationen am Schläfenbein. Für Aerzte und Studierende, insbesondere für Angehende Spezialärzte. Von Professor Dr. Gerber, Königsberg i/Pr. Price M.8, or 8*s.*

Die Anatomie der Taubstummheit. Herausgegeben im Auftrage der Deutschen Otologischen Gesellschaft. Erste Lieferung. Price M.5.50, or 5*s.* 6*d.*

CASSELL AND CO., Limited, London, Paris, New York, and Melbourne.

The Open-air Treatment of Pulmonary Tuberculosis. By F. W. Burton-Fanning, M.D. Cantab., Physician to the Norfolk and Norwich Hospital, Honorary Visiting Physician to the Kelling Open-air Sanatorium. Price 5*s.*

CHURCHILL, J. AND A., 7, Great Marlborough-street, W.

A Text-book of Physiological Chemistry. For Students of Medicine and Physicians. By Charles E. Simon, M.D., late Assistant Resident Physician, Johns Hopkins Hospital, Baltimore. Second edition, revised and enlarged. Price 14s. net.

F. A. DAVIS COMPANY, 1914-16, Cherry-street, Philadelphia.

The Surgical Diseases of the Genito-urinary Tract, Venereal and Sexual Diseases. A Text-book for Students and Practitioners. By G. Frank Lydston, M.D., Professor of the Surgical Diseases of the Genito-Urinary Organs and Syphilology in the Medical Department of the State University of Illinois (the Chicago College of Physicians and Surgeons). Revised edition. Price, extra cloth, $5.00 net; sheep or half-russia, $6.00 net.

"GARDENERS' MAGAZINE" OFFICE, 148 and 149, Aldersgate-street, E.C.

The Gardening Year-book and Garden Oracle, 1905. By the Editor of the *Gardeners' Magazine*. Price 1s. net.

JOHN BALE, SONS, AND DANIELSSON, LIMITED, 83-91, Great Titchfield-street, Oxford-street, W.

The Radical Cure of Corns and Bunions. By E. Harding Freeland, F.R.C.S. Eng., Surgeon to St. George's and St. James's Dispensary. Second edition. Price 1s.

KIMPTON, HENRY, 13, Furnival-street, London, E.C.

Essentials of Nervous Diseases and Insanity, their Symptoms and Treatment. By John C. Shaw, M.D., late Clinical Professor of Diseases of the Mind and Nervous System, Long Island College Hospital Medical School. Fourth edition, thoroughly revised, by Smith Ely Jelliffe, M.D., Ph.D., Clinical Assistant, Columbia University, Department of Neurology. Price 4s. net.

LONGMANS, GREEN, AND CO., 91 and 93, Fifth-avenue, New York.

The Splendor of the Human Body: A Reparation and an Appeal. By the Right Rev. C. H. Brent, D.D., Bishop of the Philippine Islands. Price 2s. 6d. net.

MURRAY, JOHN, 50A, Albemarle-street, London, W.

The Teachings of Zoroaster and the Philosophy of the Parsi Religion. By S. A. Kapadia, M.D., L.R.C.P., Barrister-at-Law, Inner Temple. (The Wisdom of the East Series. Edited by L. Cranmer-Byng and Dr. S. A. Kapadia). Price 2s. net.

P. BLAKISTON'S SON AND CO., 1012, Walnut-street, Philadelphia, U.S.A. (LEWIS, H. K., 136, Gower-street, London, W.C.)

Manual of Operative Surgery. By John Fairbairn Binnie, A.M., C.M. Aberdeen, Professor of Surgery, Kansas City Medical College, Kansas City, Mo. Price 12s. 6d. net.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.

List of the Fellows, Members, Extra-Licentiates and Licentiates of the Royal College of Physicians of London, and of the Holders of the Diploma in Public Health granted conjointly by the Royal Colleges of Physicians and Surgeons. MCMV. Price not stated.

SAUNDERS, W. B., AND CO., 9, Henrietta-street, Covent-garden, W.C.

Bacteriology and Surgical Technic for Nurses. By Emily M. A. Stoney, Superintendent of the Training School for Nurses, St. Anthony's Hospital, Rock Island, Ill. Second edition, thoroughly revised and enlarged, by Frederic Richardson Griffith, M.D. (Univ. of Penn.), of New York. Price 6s. 6d. net.

Diet in Health and Disease. By Julius Friedenwald, M.D., Clinical Professor of Diseases of the Stomach in the College of Physicians and Surgeons, Baltimore, and John Ruhrah, M.D., Clinical Professor of Diseases of Children in the College of Physicians and Surgeons, Baltimore. Price 18s. net.

SMITH, ELDER, AND CO., 15, Waterloo-place, S.W.

Saint Bartholomew's Hospital Reports. Edited by A. E. Garrod, M.D., and W. McAdam Eccles, M.S., F.R.C.S. Vol. XL. Price, to subscribers, 6s.; to non-subscribers, 8s. 6d.

"THE MUNICIPAL JOURNAL," OFFICES OF, London. (EDWARD LLOYD, LIMITED, Salisbury-square.)

The Municipal Year Book of the United Kingdom for 1905. Edited by Robert Donald, Editor of the *Municipal Journal* and the *London Manual*. Price 3s. 6d. net.

THE PRACTITIONER, Limited, 149, Strand, W.C.

Congenital Dislocation of the Hip. By J. Jackson Clarke, M.B. Lond., F.R.C.S., Surgeon to the North-West London Hospital and to the City of London Orthopædic Hospital. Second edition. Reprinted, with additions, from the *Practitioner*. Price 1s. 6d. net.

WILLIAMS AND NORGATE, 14, Henrietta-street, Covent-garden, W.C.

Transactions of the Epidemiological Society of London. New Series. Vol. XXIII. Session 1903-1904. Price 6s. net.

WILLIAMS AND NORGATE, 14, Henrietta-street, Covent-garden, W.C. (For The University Press of Liverpool.)

The Practical Study of Malaria and other Blood Parasites. By J. W. W. Stephens, M.D. Cantab., D.P.H., Walter Myers Lecturer in Tropical Medicine, University of Liverpool, and S. R. Christophers, M.B. Vict., I.M.S., Members of the Royal Society's Commission on Malaria in Africa and India, 1898-1902. Second edition, revised and enlarged. Price 12s. 6d. net.

Liverpool School of Tropical Medicine. Memoir XIII. Reports of the Trypanosomiasis Expedition to the Congo, 1903-1904, of the Liverpool School of Tropical Medicine and Medical Parasitology. By J. Everett Dutton, M.B. Vict., John L. Todd, M.D. McGill, and Cuthbert Christy, M.B. Edin. With a Comparison of the Trypanosomes of Uganda and the Congo Free State, by H. Wolferstan Thomas, M.D. McGill, and Stanley P. Linton, B.Sc., M.B. Liverpool; and a Note on Tsetse-flies by E. E. Austen, Zoological Department, British Museum. (Thompson Yates and Johnston Laboratories Report, Vol. VI., Part I., January, 1905.) Price 15s. net.

WRIGHT, JOHN, AND CO., Bristol. (SIMPKIN, MARSHALL, HAMILTON, KENT, AND CO., LIMITED, London.)

Lectures on Diseases of the Stomach and Intestines. For Practitioners and Students. With an Account of their Relations to other Diseases and of the most recent Methods in Diagnosis and Treatment; also "The Gastro-intestinal Clinic," in which all such diseases are separately considered. By Boardman Reed, M.D., Professor of Diseases of the Gastro-intestinal Tract, Hygiene and Climatology in the Department of Medicine of Temple College, Philadelphia. Price 21s. net.

The Naked-eye Anatomy of the Human Teeth. By Thos. E. Constant, Licentiate of the Royal College of Physicians, London, Licentiate in Dental Surgery, and Member of the Royal College of Surgeons of England. Price 7s. 6d. net.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

DALBY, AUGUSTUS WILLIAM, L.R.C.P. & S. Edin., has been re-appointed Medical Officer of Health of the Frome (Somerset) Rural District.

DAWSON, HENRY KING, M.D., B.S. Durh., has been appointed Public Vaccinator of the Epsom and Ashtead Parishes of the Epsom Union.

FARRANT, C., M.R.C.S., L.R.C.P. Lond., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Taunton District of the county of Somerset.

GOODING, MATTHEW RICHARD, M.R.C.S., L.R.C.P. Lond., has been re-appointed Medical Officer for the Bideford (Devon) Urban District Council.

NASH, J. T. C., M.D. Edin., has been appointed Medical Officer to the Southend-on-Sea Education Authority.

NELSON, PHILIP, M.D. Vict., M.D. Liverp., has been appointed Honorary Assistant Physician and Laryngologist to the Liverpool Chest Hospital.

PARTRIDGE, S., M.B. Edin., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Wednesbury District of the county of Stafford.

PEARSE, JAMES, M.D., C.M. Edin., has been re-appointed Medical Officer of Health for Trowbridge (Wilts) Urban District Council.

ROGERSON, O. H., L.S.A., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Osmotherley District of the county of York.

WORRALL, E. S., M.R.C.S. Eng., L.R.C.P. Lond., has been appointed Medical Officer in Charge of the New Electro-therapeutic Department, University College Hospital.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

AYR DISTRICT ASYLUM.—Junior Medical Officer, unmarried. Salary £120, with board, apartments, attendance, and laundry.

BEDFORD COUNTY HOSPITAL.—House Surgeon. Salary £100 per annum, with apartments, board, and laundry. Also House Physician. Salary £60 per annum, with apartments, board, and laundry.

BIRKENHEAD UNION, INFIRMARY, WORKHOUSE, AND SANATORIUM.—Resident Assistant Medical Officer. Salary £120 per annum, with board, washing, and apartments.

BIRMINGHAM AND MIDLAND EAR AND THROAT HOSPITAL, Edmund-street.—House Surgeon. Salary at rate of £70 per annum.

BRADFORD CHILDREN'S HOSPITAL.—House Surgeon. Salary £100.

BRADFORD POOR-LAW HOSPITAL AND WORKHOUSE.—Resident Assistant Medical Officer, unmarried. Salary £125, with rations, apartments, and washing.

BRIGHTON THROAT AND EAR HOSPITAL, Church-street, Queen's-road.—Non-Resident House Surgeon for six months, renewable. Salary at rate of £75 per annum.

CAMBRIDGE, ADDENBROOKE'S HOSPITAL.—House Physician, also Assistant House Surgeon, both for six months. Salary of former at rate of £50 per annum, and of latter £30 per annum, with board, residence, and washing.

CARMARTHENSHIRE INFIRMARY.—Resident Medical Officer, unmarried. Salary £100 per annum, with apartments, board, attendance, &c.

CHELSEA HOSPITAL FOR WOMEN, Fulham-road, S.W.—Clinical Assistant for three months.

CHELTENHAM GENERAL HOSPITAL.—Junior House Surgeon, unmarried. Salary £50 per annum, with board and lodging. Also Surgeon-in-Charge (unmarried) of Branch Dispensary. Salary £90 per annum, with board and lodging.

CHICHESTER INFIRMARY.—Honorary Medical Officer.

DUDLEY, GUEST HOSPITAL.—Assistant House Surgeon for six months. Salary £40 per annum, with residence, board, and washing.

ESSEX AND COLCHESTER HOSPITAL.—Honorary Physician.

GARLANDS, CARLISLE, CUMBERLAND AND WESTMORLAND ASYLUM.—Junior Assistant Medical Officer. Salary £130 a year, rising to £150, with board, lodging, and washing.

GLASGOW UNIVERSITY.—Grieve Lectureship on Physiological Chemistry.

GREAT NORTHERN CENTRAL HOSPITAL, Holloway, N.—Physician to Out-patient Department for Diseases of Women. Also Senior House Surgeon, Two Junior House Surgeons, and a Junior House Physician, in each case for six months. Salary of Senior Officer at rate of £60 per annum and of Junior Officers at £30 per annum, with board, lodging, and washing. Also Pathologist and Curator. Salary 50 guineas per annum.

HUDDERSFIELD INFIRMARY.—Junior House Surgeon. Salary £40 per annum, with board, lodging, and washing.

LENZIE, GLASGOW DISTRICT ASYLUM, Woodilee.—Junior Assistant Medical Officer. Salary £125, with board, lodging, washing, &c.

LINCOLN COUNTY HOSPITAL.—Senior House Surgeon, unmarried. Salary £100 per annum, with board, lodging, and washing. Also Junior House Surgeon for six months, renewable. Salary £25 for each period of six months, with board, residence, and washing.

LONDON TEMPERANCE HOSPITAL.—Assistant House Surgeon for six months. Honorarium at rate of £75 per annum.

MENSTON, NEAR LEEDS, WEST RIDING ASYLUM.—Fourth Assistant Medical Officer. Salary £150, rising to £180, with board and apartments.

METROPOLITAN HOSPITAL, Kingsland-road, N.E.—House Physician, House Surgeon, Assistant House Physician, and Assistant House Surgeon, all for six months. Salaries of Senior Officers at rate of £40 a year; of Assistants at rate of £20 a year.

NATIONAL HOSPITAL FOR THE RELIEF AND CURE OF THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury.—Assistant Physician for Out-patients.

NORTHAMPTON GENERAL HOSPITAL.—Assistant House Surgeon, unmarried. Salary £50 per annum, with apartments, board, and washing.

OLDHAM INFIRMARY.—Senior House Surgeon. Salary £100 per annum, with board, residence, and washing.

ROYAL HALIFAX INFIRMARY.—Third House Surgeon, unmarried. Salary £80 per annum, with residence, board, and washing.

ROYAL HOSPITAL FOR DISEASES OF THE CHEST, City-road, E.C.—House Physician for six months. Salary at rate of £80 per annum, with board, lodging, and washing.

ST. ALBANS, HERTS COUNTY ASYLUM, Hill End.—Junior Assistant Medical Officer. Salary £150 a year, with board, lodging, and washing.

ST. MARY'S HOSPITAL MEDICAL SCHOOL, Paddington, W.—Curator of Museum and Assistant Pathologist. Salary £100 per annum.

ST. PANCRAS INFIRMARY AND WORKHOUSE, Pancras-road, London.—Female Junior Assistant Medical Superintendent and Assistant Medical Officer. Salary at rate of £80 per annum, with board, apartments, and washing.

SALFORD ROYAL HOSPITAL.—Junior House Surgeon for three months. Salary at rate of £70 per annum, with board and residence.

SALOP INFIRMARY.—House Physician for six months, renewable. Salary at rate of £50 per annum, with board and apartments.

STRAITS SETTLEMENTS, MUNICIPALITY OF GEORGE TOWN, Penang.—Assistant Health Officer, unmarried. Salary £300 a year, rising to £350, and horse allowance.

TAUNTON AND SOMERSET HOSPITAL, Taunton.—Resident Assistant House Surgeon for six months. Salary at rate of £50 per annum, with board, lodging, and laundry.

TEIGNMOUTH HOSPITAL, South Devon.—House Surgeon. Salary £70 a year, with board, lodging, and washing.

UNIVERSITY COLLEGE, LONDON.—Assistant Physician.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—Physician to Out-patients.

WEST LONDON HOSPITAL, Hammersmith-road, W.—One House Physician and Three House Surgeons, all for six months. Board, lodging, and laundry allowance.

WESTMINSTER GENERAL DISPENSARY.—Resident Medical Officer. Salary at rate of £120 per annum, with rooms, gas, coal, and attendance.

WIGAN INFIRMARY.—Junior House Surgeon. Salary £80 per annum, with apartments, rations, and washing.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—Assistant House Surgeon for six months. Honorarium at rate of £75 per annum, with board, lodging, and washing.

Births, Marriages, and Deaths.

BIRTHS

BOUSFIELD.—On March 2nd, at Prince's-square, W., the wife of Stanley Bousfield, M.A., M.B., of a son.

CARRUTHERS.—On March 6th, at Kensington Hall-gardens, the wife of J. F. Carruthers, M.D., of a daughter.

HENRY.—On Feb. 27th, at Wincott House, 175, Kennington-road, S.E., the wife of George Nicol Henry, M.B., C.M., of a son.

MARRIAGES.

CHANING-PEARCE—CHAPMAN.—On March 1st, at All Saints, Kingston-on-Thames, David Arnold Chaning-Pearce, M.D., eldest son of Joseph Chaning-Pearce, M.D., of Ramsgate, to Emily Constable, youngest daughter of William Chapman, of Knights park, Kingston-on-Thames.

LEEDS—BARKER-DUNCAN.—On the 7th inst., at Palmerston-place Church, Edinburgh, Charles George Stretton Leeds, M.B. Edin., son of the late Henry Leeds, Conservator of Forests, India, to Louise Christian (Elsie), only daughter of the late James Barker-Duncan, Writer to the Signet, and Mrs. Barker-Duncan, 10, Murrayfield-avenue, Edinburgh.

STEEN—BARNES.—On March 1st, at St. Mary's Church, Twickenham, by the Rev. F. J. Birkett, M.A., assisted by the Rev. Canon Murray and the Rev. E. Lopresti, Robert Hunter Steen, M.D. Lond., Medical Superintendent of the City of London Asylum, Stone, to Alice, daughter of the late Lawrence Barnes, of Ealing.

DEATHS.

GREEN.—On March 3rd, at 85, Waverley-road, Southsea, George Gordon, the infant son of Staff-Surgeon H. W. Gordon Green, M.R.C.S. Eng., L.R.C.P. Lond., and Maud Gordon Green, aged six weeks.

SANDERSON.—On March 6th, Edgar Stanley Sanderson, M.R.C.S., L.R.C.P., of Birmingham, aged 40 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE TRUTH ABOUT VACCINATION.

UNDER the above heading the publishing committee of the Association of Public Vaccinators of England and Wales has issued a little pamphlet which is admirably adapted to catch the ears of those who may have been led away by the specious statements of antivaccinationists. It is written in a popular style and costs 1*d*. There are two illustrations, reproductions of photographs, the one being of a case of small-pox in an unvaccinated person and the other of a case of small-pox in a vaccinated person. The pamphlet is not controversial but states simple facts and, except in the case of the fanatical antivaccinationist who is beyond any form of argument, should convince any wavering. We hope that it will be widely distributed for it is an excellent publication.

A QUEER KIND OF DRAUGHT.

To the Editors of THE LANCET.

SIRS,—I attended a midwifery case yesterday and while waiting for the placenta to be delivered the "nurse" approached with a wineglass and collected about a teaspoonful of blood from the cut end of the cord. I asked what she wanted the blood for. She replied that it was good for the "after-pain" mixed with brandy. I expressed my horror and forbade it to be given but when I was at the other end of the room I heard the patient say, "It was nasty," and found that the "nurse" had given her the draught of placental blood and brandy. I agree with the patient and say it is nasty. Needless to say, these were foreign people.

I am, Sirs, yours faithfully,

Widegate-street, E.C., Feb. 27th, 1905. ISAAC GEORGE.

VICARIOUS MENSTRUATION.

To the Editors of THE LANCET.

SIRS,—I have lately been attending a case of "epistaxis" in a girl aged 20 years. The bleeding only occurs at the monthly periods, at which time she loses but little blood in the ordinary way. As she is extremely anæmic the case is interesting from the treatment point of view. She has been taking the usual tonics prescribed in cases of anæmia but I am not satisfied with the progress made. Could any of your readers advise me of any special treatment in a case of this kind?

I am, Sirs, yours faithfully,

Great Glenn, Leicester, March 1st, 1905. FRANCIS G. BENNETT.

THE IDENTIFICATION OF TYPHOID FEVER.

"X. Y. Z." sends us an interesting letter recalling some old hypotheses with regard to typhoid fever. He alludes in particular to the claims of the late Dr. Alexander P. Stewart first to have made it clear that typhus and typhoid fever were two essentially different diseases. There is a footnote in Sir Thomas Watson's classical work to the following effect: "It is a bare act of justice to record that so early as the spring of 1840 a paper was read before the Parisian Medical Society by Dr. Alexander P. Stewart in which the main distinctions between typhus and typhoid fever were clearly set forth." "X. Y. Z." tells us that he worked under Dr. Alexander Stewart at this time and well remembers the attention that he paid to the distinctive symptoms of typhoid fever. He also points out that in the fourth edition of Sir Thomas Watson's "Medicine" typhoid fever is stated not to exist in the tropics, although he and his coevals had excellent reasons for knowing that this was not the case.

MOSQUITOES AND YELLOW FEVER.

As already mentioned in THE LANCET of Jan. 21st, p. 200, the second annual convention of the American Mosquito Extermination Society was held in New York and Brooklyn on Dec. 15th and 16th, 1904, and the papers that were read included one by Dr. Quitman Kohnke, health officer of the city of New Orleans, on the Transmission of Yellow Fever by Mosquitoes. This paper, with numerous pictorial illustrations, is published in the *Scientific American Supplement* of Feb. 11th. Dr. Kohnke says that the method of infection in yellow fever is in many respects similar to the process by which malaria is communicated. Formerly it was believed that yellow fever was conveyed by contact either with patients or with articles infected by them, the so-called fomites, but the experiments conducted for the American Government in Cuba demonstrated the harmlessness of fomites by the placing of three young American men for 20 consecutive nights in a room to sleep upon and under bedclothes soiled by previous use in the yellow fever hospital. The room was kept moist and warm and garnished with articles taken from fatal cases of yellow fever, so that there was intimate contact with articles freely exposed to possible infection, but mosquitoes were excluded and no person caught the disease. Subsequently four out of seven of the persons experimented upon were infected by means of the mosquito. In a room prepared so as to exclude all possibility of infection by fomites inoculation by mosquitoes promptly produced an attack. Yellow fever, continued Dr. Kohnke, is conveyed by the stegomyia fasciata, but the germs of the disease can be taken up by the insect only during the first

three or four days of the fever; after that time the blood of the patient cannot infect the mosquito. The germs require about 12 days to migrate from the stomach of the insect to the salivary glands, from which they may be injected through the mosquito's biting organ into the human blood stream. Mosquitoes after becoming infectious are capable of inoculating the disease into the human subject at intervals of three days (period of feeding) for practically an indefinite time. Screening the patient from mosquitoes during the first four days of fever (before the diagnosis) or killing all mosquitoes in the room before the twelfth day after their possible infection would certainly prevent a second case, but in practice this cannot be accomplished. The extermination of the stegomyia mosquitoes in localities infected or liable to become so would be much easier than the screening of all fever cases. Water cisterns are known to be breeding places for the stegomyia and ought to be screened. It is estimated, however, that about 75,000 of these cisterns exist in New Orleans and that very few are screened. In quarantine measures against yellow fever, concluded Dr. Kohnke, destruction of mosquitoes is exceedingly important, being second only to the detention for five days after exposure of those who are not immune; these two precautions are the only essentials in quarantine measures against the disease.

A NEW SURGICAL DRESSING.

WE have received from Mr. A. Strauss-Collin of Bush Lane House, Cannon-street, London, E.C., a sample of a new surgical dressing called "vulnoplâtre" which would appear to possess some advantages as a first-aid dressing and in minor surgery. The part of the dressing intended to be placed next the wound consists of a widely perforated waterproof fabric with an adhesive margin for affixing to the skin. Above this is a layer of cotton-wool and above this again the final covering of the dressing. This combination of plaster, cotton-wool, and bandage is certainly ingenious and deserves careful trial. The inventor claims for the dressing thorough absorption and non-retention of discharges.

THE CASE OF DR. A. D. GRIFFITHS.

To the Editors of THE LANCET.

SIRS,—Will you kindly allow me to acknowledge the receipt of the following additional contributions?

I am, Sirs, yours faithfully,
ALEXR. P. FIDDIAN, M.B. Lond.,
23, The Walk, Cardiff, March 7th, 1905. Treasurer.

	£	s.	d.		£	s.	d.
Amount previously acknowledged	53	8	0	Dr. R. W. Jones	1	1	0
Dr. Lewis Wayne Morgan	5	0	0	Dr. Edward J. Parry ...	1	1	0
Mr. J. Lynn Thomas, C.B.	2	2	0	Mr. W. B. Wooding ...	1	1	0
Dr. Herbert G. G. Cook	1	1	0	Mr. Daniel T. Edwards	0	10	6
				Dr. Ll. Roberts	0	10	6
				Mr. D. E. Thomas	0	5	0

A WARNING.

To the Editors of THE LANCET.

SIRS,—Please warn medical men against a man who looks about 50 years of age, is stoutly built, of medium height, round faced; when seen he had light-coloured hair, was clean shaven, except or a small light-coloured moustache, and had an ecchymosis of the left conjunctiva. He speaks with a moderate American accent, says he is a doctor, and skilfully explains his call as due to what he has heard from a well-known medical man in a distant—perhaps colonial—city, whom he will be sure his intended victim knows; and after conversation on general subjects he winds up with a plausible tale of requiring the temporary loan of a moderate sum (for an exigency of the morrow) which he loathes to seek from pawnbroker or money-lender, but will be so grateful to receive from his medical host; and if desired will leave a valuable article with the lender as a proof of his good faith and return the loan in a couple of days. Should the loan be made repayment would fail, and the "proof of good faith" would be found of dubious value as compared with the loan.

I am, Sirs, yours faithfully,
March 7th, 1905. MEDICUS.

THE OLD EPSOMIAN REGISTER.

Dr. George Francis Longbotham, recently of Birtley, Dr. Cecil Owen Gray, recently of Sutton Coldfield, and Dr. Orme Stirling James Kellet, recently of Victoria-park, N.E., are requested kindly to communicate their changes of address, for use in an Old Epsomian Register to be issued shortly, to Mr. Edred M. Corner, F.R.C.S., 37, Harley-street, W.

R. H.—1. The treatment of pain following extraction of the teeth depends upon the cause of the pain. If due to suppuration in the tooth socket it must be frequently syringed with an antiseptic lotion and, if necessary, packed with gauze. Pain often arises from undue laceration of the surrounding tissue during the operation; in these circumstances hot fomentations may be used and an anodyne mouth wash prescribed. After all operations of tooth extraction an antiseptic mouthwash should be used. 2. All handbooks of physiological chemistry supply the information which our correspondent seeks. "Food in Health and Disease," by Dr. I. Burney Yeo (Cassell and Co.); "The Principles of Dietetics," by Dr. Robert Hutchison (E. Arnold); and "Physiological Chemistry," by Dr. W. D. Halliburton (Longmans), might be consulted.

Practitioner (whose letter bears the Exeter post-mark).—If our correspondent will be good enough to supply us with his or her name and address the question as to the publication of his or her communication shall receive consideration.

Scot.—There is not the slightest difficulty in producing complete anæsthesia by "gas" but our correspondent is strongly advised not to seek the services of any but a properly qualified medical man.

Renitus.—We have not heard of the "cure" under that name. The general wording of the claims to utility suggests that it is a quack affair.

Dicus.—We have no special information but are none the less certain from the nature of the "Professor's" apparatus that he is the usual charlatan.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (13th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Royal Orthopædic (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.).

TUESDAY (14th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Royal Ear (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.).

WEDNESDAY (15th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.) Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.).

THURSDAY (16th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), St. Mark's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

FRIDAY (17th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Central London Throat and Ear (2 P.M.), Royal Ear (10 A.M.).

SATURDAY (18th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

MONDAY (13th).—MEDICAL SOCIETY OF LONDON (11, Chandos-street, Cavendish-square, W.).—8.30 P.M. Discussion on Carcinoma (opened by Dr. R. F. Bashford).

TUESDAY (14th).—PHARMACEUTICAL SOCIETY OF GREAT BRITAIN (17, Bloomsbury-square, W.C.).—8 P.M. Papers:—Mr. J. S. Hills: An Investigation on Linum Catharticum (a communication from the Research Laboratory of the Society).—Mr. E. H. Farr and Mr. R. Wright: Notes on Standardised Powdered Alcoholic Extracts—Extract of Belladonna Leaves.

CHELSEA CLINICAL SOCIETY (Chelsea Dispensary, Manor-street, King's-road, S.W.).—8.30 P.M. Annual Clinical Debate on Chronic Constipation and its Medical and Surgical Treatment. Mr. W. A. Lane, Dr. V. Dickinson (President), Dr. F. Palmer, and Dr. W. H. Goddard will take part in the debate.

ROYAL MEDICAL AND CHIRURGICAL SOCIETY (20, Hanover-square, W.).—8.30 P.M. Adjourned Discussion on the Subsequent Course and Later History of Cases of Appendicitis after Operation (opened by Mr. H. Cripps). Dr. S. West, Mr. J. D. Malcolm, Mr. W. G. Spencer, Mr. B. Clarke, Mr. F. C. Wallace, and others will take part in the discussion.

WEDNESDAY (15th).—ROYAL MICROSCOPICAL SOCIETY (20, Hanover-square, W.).—8 P.M. Lecture:—Mr. J. E. Stead: A Review of the Work done by Metallographers (illustrated by lantern slides).

THURSDAY (16th).—CHILDHOOD SOCIETY AND THE BRITISH CHILD-STUDY ASSOCIATION (Parkes Museum, Margaret-street, W.).—8 P.M. Lecture:—Miss M. McMillan: Fatigue in Children. (Arranged by the British Child-Study Association.)

FRIDAY (17th).—EPIDEMIOLOGICAL SOCIETY OF LONDON (11, Chandos-street, Cavendish-square, W.).—8.30 P.M. Paper:—Dr. A. E. Boycott: Ankylostomiasis (illustrated by lantern slides).

SOCIETY FOR THE STUDY OF DISEASE IN CHILDREN (11, Chandos-street, W.).—5.30 P.M. Cases will be shown by Dr. O. Grünbaum, Mr. H. Evans, Mr. J. J. Clarke, Mr. S. Stephenson, Dr. G. Carpenter, and Dr. R. Hutchison.

LARYNGOLOGICAL SOCIETY OF LONDON (20, Hanover-square, W.).—2 P.M. Exhibition of Pathological Specimens. 3 P.M. Cases will be shown by Mr. Parker, Dr. Tilley, Mr. de Santi, Sir Felix Semon, Mr. C. J. Symonds, Dr. StClair Thomson, Dr. E. Law, Dr. Milligan, Dr. A. Thorne, Mr. Robinson, Dr. Grant, Dr. Davis, Dr. Lack, Mr. Barwell, and Dr. W. Williams.

SATURDAY (18th).—LARYNGOLOGICAL SOCIETY OF LONDON (20, Hanover-square, W.).—2 P.M. Demonstration:—Prof. Glück (Berlin): Method of Removal of the Entire Larynx.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MONDAY (13th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. T. C. FOX: Clinique. (Skin.) 5.15 P.M. Dr. S. Taylor: Mitral Stenosis.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Dr. Russell: Indigestion.

TUESDAY (14th).—ROYAL COLLEGE OF PHYSICIANS OF LONDON (Pall Mall East).—5 P.M. Dr. T. M. Legge: Industrial Anthrax. (Milroy Lecture.)

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. L. Guthrie: Clinique. (Medical.) 5.15 P.M. Prof. A. E. Wright: Therapeutic Inoculation.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Dr. Shuter: Anæsthetics.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Queen-square, Bloomsbury, W.C.).—3.30 P.M. Dr. Tooth: Cranial Nerves.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—4.30 P.M. Lecture:—Dr. R. M. Leslie: Prognosis in Chronic Pulmonary Affections.

WEDNESDAY (15th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. P. Paton: Clinique. (Surgical.) 5.15 P.M. Mr. J. Poland: Some Injuries to the Elbow-joint.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Dr. Beddard: Practical Medicine.

CENTRAL LONDON THROAT AND EAR HOSPITAL (Gray's Inn-road, W.C.).—5 P.M. Demonstration: Dr. Wylie: Naso-Pharynx.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST (Brompton).—4 P.M. Dr. Perkins: Bronchiectasis.

THURSDAY (16th).—ROYAL COLLEGE OF PHYSICIANS OF LONDON (Pall Mall East).—5 P.M. Dr. W. C. Bosanquet: Some Considerations on the Nature of Diabetes Mellitus. (Goulstonian Lecture.)

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. Hutchinson: Clinique. (Surgical.) 5.15 P.M. Dr. M. Bramwell: Hypnotic Suggestion and its Therapeutic Value.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Mr. Edwards: Urinary Cases.

CHARING CROSS HOSPITAL.—4 P.M. Dr. Bosanquet: Demonstration of Medical Cases. (Post-Graduate Course.)

MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST (7, Fitzroy-square, W.).—5 P.M. Lecture:—Dr. F. W. Price: The Prognosis and Treatment of Early Pulmonary Tuberculosis. (Post-Graduate Course.)

SAMARITAN FREE HOSPITAL FOR WOMEN (Marylebone-road, N.W.).—3 P.M. Dr. Bell: Abortion.

THE HOSPITAL FOR SICK CHILDREN (Gt. Ormond-street, W.C.).—4 P.M. Lecture:—Mr. Lane: Tubercular Affections.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—4.30 P.M. Lecture:—Mr. W. Edmunds: Intestinal Obstruction.

FRIDAY (17th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. E. Waggett: Clinique. (Ear.)

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.) 5 P.M. Dr. Abraham: Cases of Skin Disease.

EDITORIAL NOTICES.

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Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

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MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index to Vol. II. of 1904, which was completed with the issue of Dec. 31st, and the Title-page to the Volume, were given in THE LANCET of Jan. 7th.

VOLUMES AND CASES.

VOLUMES for the second half of the year 1904 are now ready. Bound in cloth, gilt lettered, price 18*s.*, carriage extra.

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METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Mar. 9th, 1905.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind	Rain-fall.	Solar Radia in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks at 8.30 A.M.
Mar. 3	30·22	N.E.	0·03	70	45	35	36	37	Cloudy
,, 4	30·28	S.W.	...	60	47	33	35	35	Cloudy
,, 5	29·92	S.W.	0·01	51	49	35	44	46	Cloudy
,, 6	29·99	N.W.	0·19	81	51	42	42	43	Cloudy
,, 7	29·94	W.	0·01	63	53	43	45	46	Overcast
,, 8	30·08	S.W.	0·14	70	51	39	38	41	Overcast
,, 9	29·55	S.W.	0·15	66	53	41	49	50	Showery

During the week marked copies of the following newspapers have been received:—*Manchester City News, Lincolnshire Echo, Devon and Exeter Gazette, Surrey Comet, Reading Mercury, Daily News, Liverpool Post and Mercury, Standard, Aberdeen Weekly Free Press, Barnsley Chronicle, Hertfordshire Mercury, Morning Leader, Plymouth Mercury, Freeman's Journal, Liverpool Courier, St. James's Gazette, Newcastle Daily Chronicle, Mining Journal, Truth and Mercy, National Service Journal, Local Government Chronicle, Newcastle Journal, Bath Weekly Argus, &c.*

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